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AUGUST 1955
VOL. XX NO. 8

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B. C. VERSUS A. C.*

Henry Adams once wrote a basic text in modern civilization under the title "The Virgin and the Dynamo" contrasting therein the central preoccupations of the medieval vs. the modern man. Possibly if the same author were writing today concerning the modern age vs. the age ahead, he might entitle his work * "Before and After Computers"—so rapid is the impact of these instruments on management science. Nevertheless few management people yet appreciate the radical advance represented by the word *Automation.*

Let's review briefly the evolving devices underlying our productive society.

Primitive man adds a rock to his hand
Using fire he chips the flint
The lever and the wheel and the
  cutting tool = machines
Machines + the engine = the factory

Everything up to this point substitutes mechanism for muscle. Man must still always judge and guide.

The computer judges and guides! This makes the second and possibly major industrial revolution of all history.

Taking another track, science began as observation and classification of data and became mature only with the addition of mathematics.

The data of management + mathematics =
  Operations Research
Automation + operations research =
  scientific management of the future

The computer contributes self-correction and "feedback" to the machine, it also contributes self-correction and "feedback" to management thinking. Management judgment and guidance will become increasingly scientific as operations research provides quantitative data for management decision. Science will be increasingly necessary to analyze problems and furnish the criteria to the computer which with perfect memory, perfect self control, and cheap lightning measurement will tend to release management from many of the limitations of experience, ignorance, stupidity, and prejudice.

This future now beckoning American management demands humility and discipline on the part of our leaders who must:

Rethink all production and distribution
  processes;
Upgrade, retrain, and reassign personnel;
And provide the dynamic market essential
  for this development.

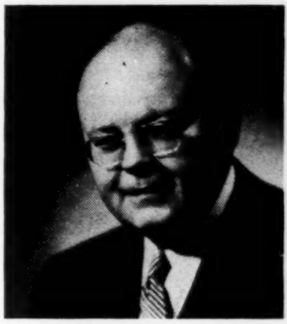
People must be shifted from repetitive work to control panels, maintenance, "taping," process design, machine design, and manufacture.

At the same time the horizons of both management and labor must resolve the social conflicts and economic problems of "collecting dues" and "marketing cars."

S.A.M.'s goal is to help this revolution by having 100 local chapters studying scientific management locally, continuously synthesizing time-and-motion study, cost accounting, statistics, human relations, automation, and operations research. Only this kind of continuous local management development can guarantee the future of the American way of life, victory in "competitive co-existence," world progress, and possibly peace.

F. F. Bradshaw
President

AL N. SEARES is Vice President of the Remington Rand Division of Sperry Rand Corporation. He is S.A.M.'s Vice President of Distribution and a member of Advanced Management's Publications Committee, a member of the Executive Committee and past Chairman of the Board of the National Sales Executives, and is active in many other organizations devoted to the advancement of management. Among the books he has written are "Graphic Controls for Sales Management," and "Personnel Administration—Records and Routines."



The Job Ahead For Sales Management

By Al N. Seares
Vice President
Remington Rand Division
Sperry Rand Corporation

"We can no longer afford to 'manage' by exhortation and incantation," Al Seares states in viewing the future for sales management. He discusses various challenges facing sales executives such as improving the determination of profitable customers and good prospects, developing market penetration and sales analysis, and the vital need for the development of broad sales leadership.

ALL times are uncertain times. Looking ahead is always an uncertain enterprise. It is given to no man to foresee the future clearly in detail. Yet, we can judge the future—within limits—by the past. In so doing, we cannot let statistics serve as a beacon we can follow uncritically. We must, whether we like it or not, temper statistical and economic judgments by political judgments. We must take account of the political temper of the times and estimate its direction and intensity.

We no longer hear it said that America's plant is fully built, and that our only problem is to divide a fixed quantity of pie among an increasing number of hungry mouths. For the death of that notion, we can all be grateful—for that was the yielding to a black despair that is no part of the philosophy of any sales executive.

I am encouraged, and my confidence for the future is strengthened and fortified, by something I sense in the air. Probably all of you have sensed it too. That is the renewed recognition, even by socialist economists, of the fundamental importance of free markets and of free choice. Even those proponents of the all-powerful state are beginning to see that there is no way to plan and no way to manage without the price mechanism, and without the meeting of minds in the market place of competitive buyers and sellers. Hand in hand with that recognition of economic truth by those who have denied it in the past, I sense a recognition by increasing numbers of people that freedom is important.

In this respect, I believe we are living through a period in which the long, slow swing of the pendulum toward statism, socialism, collectivism, or whatever you choose to call it is reversing. I think the good sense of the American people is reasserting itself. I believe they are ready and eager for a return to sound and realistic thinking and that they are ahead of the politicans. For that reason, I face the future with confidence. With Abraham Lincoln, I believe you can fool some of the people all of the time and all of the people some of the time—but you cannot fool all of the people all of the time. Now people are moving toward individual freedom and individual responsibility. I am sure that this is the present majority feeling. People want and will get government by law to replace government by the caprice of lawless men.

For that reason, I believe the job ahead for sales management is the job that sales executives have always done when markets are free and competition is keen. The old, sound principle that governed solid sales executive performance remains. The changes develop from this principle.

Ours is still a growing and vigorous nation. I shall not repeat known statistics about our enormous and continuing growth in population, in plant capacity, in national income—and even in disposable personal income—of the last several years. These are real and they are present, though some of our measures of them are less exact than the figures which pretend to measure them. True, we have excessive tax burdens to bear both as private individuals and as executives of our individual firms. Heavy as these burdens are, they are not so heavy they cannot be borne. They simply mean we have less latitude for error than our fathers did in the 1920's. We must be more careful and yet more daring, more studious, and more imaginative, than they were. We must rely more than they did on information pertaining to our individual problems. We must handle this information more creatively and more understandingly than they did. This is a challenge that is very real and very great. I do not minimize it, but I do not fear the capacity of America's sales executives to meet and surmount it.

As sales executives, we have to master more tools and handle them with greater skill than those who went ahead of us. We have to think in greater terms. We have to deal with larger issues. We have to make more far-reaching decisions. We have to deal with vastly more complex problems. We, however, have better tools of management, better training, and better advisers at our command than they had. We can build upon the tested wisdom of the past with the aid of these new tools that have been forged for us and by us in recent years.

Essentially, our task is their task writ large. It is to use all our resources with increased precision and far less waste than our predecessors did, to meet the wishes, needs—and prejudices—of individuals who have the power to buy or not to buy. We must do this in friendly but serious rivalry with our competitors in our own industries and in other industries. We are all competing for the spendable dollars in the hands of potential buyers.

For Tomorrow

Competing successfully is our job. We must do it, for much more than personal success depends upon it. To the extent that we do our job, we provide jobs and purchasing power to our employees and to all Americans. Unless we all keep on selling more and more, we cannot meet the needs of more and more people for more and more things. Only by selling more and more can we stave off that economic collapse which the Marxians predict hopefully as their one effective means of pulling down mighty America. Our country stands between them and their dream of world conquest and enslavement.

To this end of selling, we can no longer afford to "manage" by exhortation and incantation. It's the quarterback, not the cheerleader, who masterminds and manages his team to victory —or defeat. I would be the last to deny the value of enthusiasm and persistence to the sales organization and every man in it. I do say to you that enthusiasm is no substitute for knowledge. The Englishman who assumes that shouting louder will make a native understand English has nothing on the sales manager who thinks enthusiasm can substitute for knowledge. What constitutes a prospect and what motivates a prospect to exchange some of his scarce dollars for what a salesman presents are fundamentals of all selling.

Sales Fundamentals

The job ahead comes down to simple fundamentals. First of all, we must know —and know that we know—the difference between a profitable customer and an unprofitable customer. This is a question of fact, and not a matter of opinion. No amount of fast talk can overcome the inherent fallacy of the notion that we can lose money on individual accounts and make a profit on their combined volume. The profit we realize is the sum of profits and losses on individual accounts, and not uncommonly fifty percent of the accounts in the ledger are unprofitable when costs are distributed rationally.

A profitable customer is the man or firm with the ability to buy, the need to consume, and the capacity to pay for profitable amounts of what we can make and deliver. No amount of double talk can change that. It stands to reason that to do the job ahead we must concentrate the energies and efforts of our salesmen, and our sales promotion and sales development men, on profitable customers and prospects like them. Hope springs eternal in the salesman's breast. A very important part of the job ahead of sales executives is to channel this optimism toward prospects who can become potentially profitable customers.

You and I, who have had to get orders to pay the butcher, the baker, and the public utility company when orders were hard to get, know the discouragement of repeated refusals. You and I also know that we earned many such refusals by our personal selling ideas because we confused suspects with prospects. We survived, and we learned from experience. Experience keeps a hard school and a costly one. With taxes and cost what they are today, including the enormous costs of hiring and training and replacing salesmen, we can no longer afford the luxury of sending salesmen to the school of experience. They can go to the schools of sales analysis and sales direction at much less cost in time, money, and personal frustration and disappointment. These things can save salesmen who otherwise would fail.

One of our vitally important jobs ahead is to predetermine the difference between prospects and suspects and to teach salesmen the importance of this predetermination. Now, this can never be a hundred percent perfect thing. There will always be the exception. The personal element can never be taken out of selling. Some logical prospects will never buy. Some very unlikely suspects do. What we remember from our own days as salesmen (and what our salesmen will remember, if we give them a chance to learn) is the exceptional sale, the unusual and illogical sale, the much needed sale we should not have made according to the rules. We must prevent our salesmen from having many chances to learn and remember such experiences.

I. Determining Good Prospects

It is now a commonplace that usually about fifteen to twenty-five percent of the accounts on the books contribute up to eighty percent of the volume. That is not a good situation for it means that we have not studied our operations closely enough, and we have not devised effective preventive measures to forestall acquisition of unprofitable accounts. This is one of the jobs ahead. The tax burden and the high level of costs which in turn produce dangerously high breakeven points, now allow no latitude for a high proportion of unprofitable customers. Sales executives can and must become more profit contribution minded. Statistical control of salesmen's activities will become an imperative which cannot much longer be ignored or denied.

I think studious sales executives are aware that there are wide variations in the proportion of prospects sold and of sales to calls in different market segments. I doubt, however, that very many of us have and make enough use of sound statistical measures of these variations. We need them to control or direct the work of our salesmen. We need them to plan and execute our sales promotional, sales development, salesman recruiting, and salesman training programs. We need them in developing advertising, and in the laying out of sales territories. Getting and using them are important facets of the job ahead for sales executives.

One of the most serious problems facing all of us is the grievously high turnover of salesmen which has many costly and disastrous consequences. I do not believe there is any single cause we can find and fix effortlessly. Yet we all know that the sales organizations of our country are paying a staggering bill for recruiting and training men who are failures as salesmen. This social and economic cost must be reduced. It can, and I am sure it will, be reduced.

In my judgment, we shall do this in the very old-fashioned way that has enabled us to solve other problems. First, we must define the problem. An overall figure, an average rate of turnover, means nothing. The thing we must do is to determine the differential rates of turnover of salesmen within our respective operations. We must know the comparative mobility of salesmen at different lengths of service and ages. We must also relate mobility to other aspects of background, education, and sales aptitudes as measured by psychological tests, and our knowledge and experience in judging human nature and sales ability. Certainly, one key to lowered salesman turnover is selection of an increased proportion of recruits who have that combination of qualities which add up to sales success. We have to be better pickers of men, which means we have to assist our own judgment with what psychologists, statisticians, and other specialists can give us in basic information.

II. Reducing Salesman Turnover

Not too many years ago, some sales organizations used to hire men and send them out to sell equipped only with a price book—a sales book—and a prayer. Fortunately, those days are gone. We have all made long strides forward in our sales training techniques. New salesmen, nowadays, are given thorough and careful training in salesmanship and in knowledge of their products, in applications and "user benefits." This is good. In many cases, they actually get the quality of supervision in their formative period that sales executives want them to get always.

Yet the existing turnover of salesmen at least suggests there may be something wrong in current sales training methods. Could it be that we who are sales executives are committing, or permitting our training directors to commit, some crimes of omission or commission that contribute to the high turnover of salesmen? I make no charge. I merely raise the question. I do say, however, that a part of the job ahead is to reexamine our sales training programs—to find out how they can be improved to help reduce the costly turnover of salesmen. Possibly the cause of much of the turnover of salesmen traces back to the immediate supervision within a department or an outside office operation.

III. Developing Sales Management

On the sound principle that all business is local, it seems we must give as much autonomy as we possibly can to the local supervisory personnel. When we do this, we must give a great deal of thought and attention to the selection, training, and administrative support of these individuals. I think that too often in the past, and even at present, we have been inclined to pick our sales management associates for sales ability, rather than for their skill in managing and training and leading men. The job ahead seems to require that we organize our thinking and our programs for strengthening supervision at the direct operating level. We can no longer afford, if we ever could, to tap an excellent salesman on the shoulder and say, "Now you are a sales manager — or supervisor," and let him sink or swim. We must work out and faithfully use in training future sales executives some equivalent to the training given to future operating executives in other phases of business. Failure of individual salesmen is bad. Failure of a branch manager or a department manager is vastly worse, for his failure can also encompass and even directly cause the failure of many salesmen.

Let us always realize that these salesmen represent "human resources" looking to us in sales management to provide the caliber of leadership that will stir and develop their ambition, assuring in turn the materialization of their objectives of success, happiness and future security for their families.

It may be true that a good workman can work with poor tools, but a good workman has a right to demand good tools so as to do good work. We must gain and apply knowledge of ways to improve the selection and development of skillful local sales executives. We must make it part of the job ahead to arm and equip them with tools for local management.

As a branch sales manager, I created many of my own management tools. This experience may dispose me to grant too much latitude to the immediate sales supervisor. Perhaps it would be desirable, though I am reluctant to think so, to pull back from the sales supervisors the purely staff functions they now perform and give them to executive staff people. This should permit the immediate supervisors to devote a greater share of their time to managing and developing men. Restricting local managers is distasteful to me since I enjoyed the freedom to develop and use my own management tools. Yet it may be an important part of the job ahead for sales executives to work out this division of responsibility between unit operating sales executives and the top echelon staff men. The staff men should develop what the local sales executives can apply.

We have previously referred to the difference in effectivness of penetration of market segments. In some we may sell a third or a half of the group we solicit. In others we may sell only one in ten or twelve prospects. We need to know the facts and the reasons lying behind the facts. Unless we know them and make sure that our local sales supervisory groups know them, we tacitly sanction needless waste and unbearable cost distribution.

IV. Improving Market Penetration

A great deal of the high turnover of salesmen is probably caused by lack of exact knowledge of the sales patterns existing in different market segments. Investigations with which I am familiar show that there are significant variations in penetration among branches, departments, and among individual men. We all know from personal experience that we and all salesmen "like" certain products and concentrate on them, neglecting other products. We are sometimes inclined to minimize the consequences of this human trait. Unconsciously, this preference turns our steps toward certain types of prospects and away from others. The net result of the combination of these likes and dislikes is found in the differences in market penetration and commodity sales.

One of the jobs ahead of us is to learn to deal more effectively with this human trait in the future than we do

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today. Surely we can increase the all around proficiency of salesmen through better training and supervision. Probably we cannot make all salesmen relatively equally proficient in selling a complete or balanced line of products and services to the whole range of market segments. Some men possess greater talent and capacity for selling than other men. We can never wholly eliminate these differences. The outstanding salesman can sell more of *anything* than the mediocre man can. Yet the proficiency of *any* man can be increased through effective training and supervision. Equally important, any man's productivity can be increased by assigning him, insofar as possible, to the kind of a sales assignment he can handle best. This part of the job ahead means that we must devote more effort to analyzing the individual strengths and weaknesses of salesmen, and to the composition of economically desirable or mutually profitable selling responsibilities.

V. Leading Salesmen

If we fit round pegs into square holes and square pegs into round holes, we can expect to have high turnover of salesmen, for not many can or will adapt themselves. If we multiply this error by poor selection of the immediate sales supervisor, we compound the probability of high turnover of salesmen, and we invite high costs of hiring and training many men who never develop into successful salesmen.

We all know that the branch, district, or department manager must have a talent for inspiring confidence in his men. He must make them confident that he is genuinely interested in them. He must convince them he is truly making every possible effort to aid them in their personal development of sales skills and territory potentials. If the manager is not himself secure and mature in his judgments, able in inspiring, teaching and leading men, and competent in administering the business of his operation, no amount of personal salesmanship can make him a desirable sales manager. Even if we gain in skill and understanding in the selection of men as salesmen and sales supervisors, we shall not be doing the job ahead, unless we give them the training and the facts they need.

Off and on in the past twenty-five years, we all have heard a great deal about *selective selling.* Saying that we must throw away the shotgun and shoot with a rifle has become a cliché. Yet, very few of us can say, after carefully reviewing what we have actually done rather than what we intended to do, that we have been truly selective in our selling. A great many of us have been guilty of careless or confused analytical thinking about our sales objectives. As I see it, the job ahead, and the job we should always have done, is *to sell our capacity at the minimum total attainable cost and with the maximum attainable profit.*

In a growing economy, we must grow fast to stand still. To progress, we must grow even faster. This means to me that in the face of competition we must endeavor to sell each successive unit of output to the easiest and least costly to sell prospect remaining available. We should not concentrate solely on large customers. We should not concentrate on any single class of prospects. We must recognize that all markets involve people and that the people to whom we should try to sell are the people available to us with the most clearly recognized or recognizable latent need for what we offer and the ability to pay the price to satisfy that need. These are the people to whom we must present clear, convincing "user benefits" with the right words and the best timing to convince them.

VI. Keener Sales Analysis

Diversity makes sales management a most fascinating, challenging, and stimulating profession. The sales executive, and particularly the sales supervisor in multi-product companies, is dealing through unit managers and salesmen with the value judgments of a constantly changing group of prospects. The vastness and complexity of this problem explains, but does not excuse, the behavior of the sales executive (more common in the past than the present or future) who acted and allowed his men to act on the notion that sales are where you make them. When costs, taxes, and breakeven points were low and uncontrolled or loosely controlled, such selling worked out in practice for many sales executives. It also did not work for many others, as the history of business failures shows. When it worked, it was because its successful adherents had a flair for intuitive or unconscious prospect selection and their competitors were not much better than themselves. As progressive and carefully analytical sales executives came into positions of power, they developed better tools, records, administrative controls, and methods for choosing prospects and means of educating them to the advantages of buying.

More Than Technical Skill

Though we have come a long way, I believe we're just on the threshold of sales direction based on intensive sales analysis. I cannot see that this is going to take any of the fun or any of the challenge out of the job ahead for sales executives. On the contrary I think it will add new fascination and new creative power and enhanced importance to the sales executive function. Higher skills and keener judgments will be required to deal with more complete and more illuminating information about the value judgments of prospects, and the means to make products and sales methods coincide with these value judgments.

Nothing can be more expensive than poor sales management. The difference in cost of the best management in relation to other cost factors is relatively negligible, as it provides aggressive and imaginative management with effective "fact-power" to guide its thinking and planning.

I can see ahead to the day when sales executives will spend their time managing by exception instead of managing exceptions, as too many of us do too often today. When we have provided ourselves with down-to-earth but thoroughly and competently compiled and analyzed facts about who buys, what, when, where, for how much, and why, I believe we will do the job that sorely needs doing. This is directing and supervising our salesmen and our promotion with vastly improved precision toward the most logical markets in the most compelling ways. By doing that, we shall sell more and we shall enable people to have and enjoy more. We shall, in turn, get the benefits of better operating ratios, lowered distribution costs, and larger profits, which will permit us to make further improvements in our sales strategies techniques.

These things, I am sure, are the principal facets of the technical side of the job ahead for sales management. They are the things that sales managers

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can develop for themselves. They come by individual analysis of the problems of one's own business, by wide and thoughtful reading of the literature dealing with distribution problems in the management and specialized sales management publications that cross their desks, by active interchange of information and cross-fertilization of ideas with their professional brethren and those interested in the advancement of scientific management. These things are important. Increased technical proficiency in sales executive work and speedy and comprehensive adoption of the most suitable sales executive methods are increasingly essential parts of the job of modern and future sales executives.

Yet the sales executive in the job ahead of him dare not permit himself to become something less than a whole man and rounded member of both the business and civic community in which he lives and moves. Technical proficiency alone will not be enough to equip him to do the job ahead. *Fortune*, *Printers' Ink*, and *The Freeman* are among the publications that have devoted considerable space to pointing out that the sales, advertising and management executives, who have succeeded so brilliantly in selling the American people the fruits of the American system of free competitive enterprise, have been far less successful in selling the public the system that produces these fruits enjoyed at no other time in human history to an equal extent.

Pan American Council Established

Dr. Moacyr Alvaro of São Paulo, Brazil, has announced the organization of a Pan American Council of the International Committee for Scientific Management.

The initial members of the Pan American Council, to coordinate regional activities in the Western Hemisphere, are Brazil, Canada, Chile and the United States, with about half a dozen other Latin American national management committees expected to join shortly.

Dr. Alvaro, long active as an officer of IDORT, the Brazilian management society, is the first President of the new Council. Vice Presidents are A. N. MacKenzie of Montreal for Canada, E. Heiremans of Santiago for Chile, and Harold F. Smiddy of New York for the United States. The Secretary-Treasurer will be Mr. Aroldo Stampi of São Paulo, Brazil.

The initial plans of the new Council for Western Hemisphere activities tentatively call for a hemispherical management conference on the subject of "Management in Countries with Growing Economies," in the Fall of 1956, probably in Canada.

Need To Sell Free Enterprise

I have a hunch—it is not a theory worked out in detail—there are some very good reasons for this failure. I think some of us have, in enough cases to be very damaging to all of us, denied with our hands what we have said with our lips. We have given lip service to free competition and we have cooked up or gone along with schemes for limiting competition. We have stood still for, if we have not stood for and identified ourselves with, schemes for promoting government intervention in business. With too much complacency, if nothing more, we have kept still out of expediency or indifference when a principle of the free market was at stake. Sometimes we have been parties to a sacrifice of principle to an expedient quick buck and we have stood mute because only the other fellow's ox was gored.

We have not always kept our hands clean, and the cynicism of people with larceny in their own hearts has been used to multiply and magnify our own lapses from consistency. Coupled with the general lowering of moral standards in government and public life, this has worked in a sorely troubled time to give opponents of the American system of free enterprise a chance to smear business and damn free competition.

Then, too, I think we have made a grievous error in efforts intended to sell the American way of life. We do not make a parallel error in selling our products. We sell our products and services by showing and educating people about the "user benefits" of what we offer. We say nothing about the advantages to us and that is as it should be. We forget, however, in the efforts we make to promote free enterprise, what the benefits of free enterprise are to the man at the bench, the girl on a government payroll, and the housewife in the home. We have not always educated the preachers, teachers, writers, and other molders of public opinion. They have no acquaintance first-hand with the inner workings of business which we deal with constantly. We wrongly assume everybody understands these things we know so well. That is where we miss the boat. In this respect it is well to keep in mind the old saying, "People are usually down on what they are not up on."

We do not make it clear to others that the only way they can have a free choice of jobs to seek, places to live, stores to patronize, brands to buy—and prices to pay—is through support of the free enterprise system, free competition, and free markets. When they tolerate government intervention in the economy, they destroy the foundation of their own freedom to choose what kind of work they will do, what wages they will accept and bargain to improve, and what they will buy with their money. These are the kinds of things that affect people outside of management. These are the kinds of things that benefit them. The housewife can get much more steamed up about her right to buy the brand she wants at the store she wants to go to, than she can about the iniquity or righteousness of the government seizure of the steel industry, or the effect of excess profits taxes on capital formation.

In opening this article, I said that I believe the good sense of the American people is beginning to reassert itself and the pendulum of public opinion is beginning to swing back toward a desire for personal freedom. I do believe this. I also believe that the most important part of the job ahead for sales management is to take the leadership in preserving the kind of system, the American system of free personal choice, which makes it possible to produce more things for more people through better selling.

Sales Leadership

I believe, therefore, that it is up to each and every one of us to match his progress in sales management proficiency with equal progressiveness in other affiliations, including the political party of his choice and the civic and other organizations of which he is a member, making his voice heard in educating people to their benefits from the American system of free enterprise. I believe this to be both a public and a small repayment to the profession of selling. More, it is a patriotic duty to the present and future generations of that greatest citadel of freedom, the American Republic.

END

Have you considered developing feedback of information to those concerned in your company, in time for both stimulation of incentive and corrective action? Actual applications of the feedback principle to a variety of specific situations in a number of companies are reported in this series of papers.* Feedback to both management and employees is discussed, on such situations as assembling, machining, downtime, and maintenance.

Information Feedback To Management And Employees

The five articles presented in this series were prepared by men who have grasped how very complicated data can be recorded, tabulated, and the appropriate information fed back quickly, with the remarkable results which they describe. Data-processing machines were used, or not used, depending on the requirements of the specific situation.

I Feedback On Assembly Production

Fred F. Claassen
Industrial Engineer
Hudson Special Products Division
American Motors Corporation

The word "feedback" may be defined as "a system of control whereby raw data are obtained, analyzed, and reported to those involved in time to allow corrective action if desirable."

Industry has developed many devices which employ automatic feedback. Some examples are thermostatically controlled heating systems and automatic chokes for engines. My company's control system automatically provides our management with a simple, informative, and unbiased report of each week's progress in production and performance in the assembly area.

Aircraft assemblies are generally obtained by assembling parts in a series of progressive fixtures. For the purpose of production control, it is convenient to break each major component of an airplane under construction into smaller units which we call "control points." Manpower is allowed on the basis of time values established for each control point at the prevailing schedule.

It is necessary to change the manpower allowance under the following circumstances:

1. *Engineering changes may raise or lower direct labor requirements.*
2. *Changes in the schedules may affect requirements.*
3. *Methods improvements decrease requirements.*
4. *Lower manpower requirements result from improvements due to experience accumulated in building successive units.*

In the control of labor loads and costs, the use of learning curves has been well established in the aircraft industry. A study of aircraft production in many plants throughout the country was conducted by Mr. T. P. Wright, in cooperation with the Curtiss-Wright Corporation. A trend was found to exist which, when analyzed, was found to establish so definite a pattern that the curves developed from them have been thoroughly accepted. The one most generally utilized is referred to as the "Curtiss 80% Curve."

The 80% Curve is based on the principle that each time the quantity of ships produced is doubled, the cumulative average unit cost (in direct labor man-hours) will be 80 percent of the average unit cost of the quantity that was doubled. It becomes a straight line when plotted on log-log graph paper. (*Figure* 1, next page) The value times the number of ships provides an allowance for any known point of completion of the contract. The curve reflects reduced unit costs which normally can be expected because of improved tooling as well as greater experience. In our plant we have found many occasions for its use in labor problems besides those related to aircraft.

Our methods engineers have devised bar charts for each control point. At the end of the shift, the foreman colors in the boxes which outline the work he has performed.

Since each box represents a percentage of work within the control point, and each control point covers a specified percentage of a ship's-worth of work, it is easy to compute our daily progress. Unusual fluctuations in daily progress must be adequately explained by the foreman to the methods engineer as-

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* The first four papers were read at an Industrial Engineering Section Meeting of the Detroit S.A.M. Chapter in April, 1955.

FRED F. CLAASSEN graduated with a B.S. in Industrial Management from Miami University, Oxford, Ohio, in 1951, and has worked in industrial engineering since. He is currently with the American Motors Corporation where he is charged with the responsibility of establishing and maintaining labor standards in the parts fabricating area of the Hudson Special Products Division. A member of the Detroit Chapter of S.A.M., this is Mr. Claassen's first publication.

signed to his control point. The methods group recommends solutions where corrections are needed and follows up to assure that necessary corrections have been made.

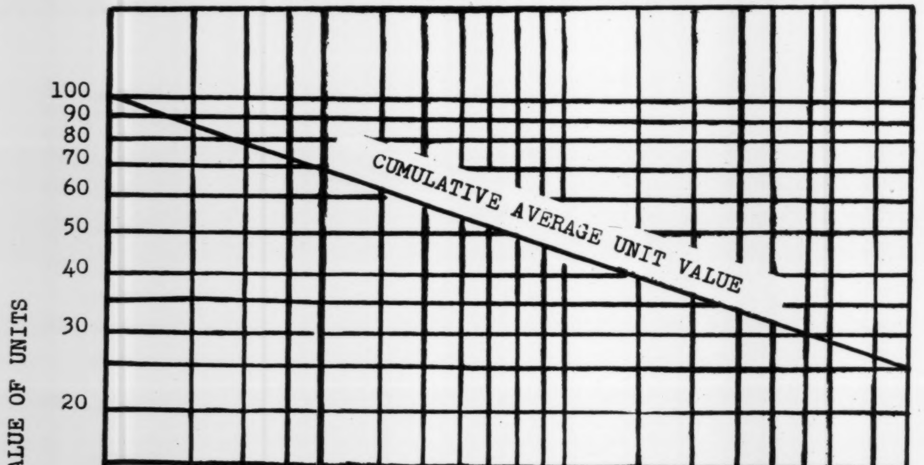
A thorough check is made each Monday morning by the methods group in order to audit the accuracy of the foremen's markings. Computations of the production in equivalent units are made as follows:

1. *A basic value is established for each control point on the basis of our experience curves. For example, in most cases, the hundredth unit hours on the experience curve for each control point is established as the value for that particular item. These standard values, once established, are not subject to change unless it becomes evident they are drastically out of proportion in relation to other components.*
2. *The total number of units produced in each control point is multiplied by the percentage of value at that particular point.*
3. *The total values for all components completed are added.*
4. *This total is then divided by 100 and the resultant number is equal to the total equivalent ships produced.*

The man-hours allowed for this number of equivalent units is found on the log-log chart. The difference from the prior week provides the allowed man-hours for the amount of work performed during the week. The Accounting Department totals work tickets in order to provide us with the actual direct hours during the same period. A comparison of these figures shows the management how the shop is doing. This is issued as a Weekly Assembly Variance Report. By 10:00 A. M. each Tuesday, we can confer with the Plant Superintendent and department heads to review efficiency and assign responsibility for any corrective action.

This rapid flow of accurate information provides management with the feedback data necessary to properly control operations. We have reduced the frequency and severity of low productive periods, and have shown when and where praise is due. We believe that our impartial mathematical analysis is providing an incentive to increased individual as well as group improvement.

FIG. I — Curtiss 80 Percent Curve



II Feedback For Improvement Incentive

Robert H. Schroeder
Detroit Diesel Division
General Motors Corporation

My company's product is used in a great many different applications. Our customer may want to use the small, efficient diesel engine in tractor, refrigerator cars, to pump a liquid or gas, to drill oil wells, to produce electricity, in pleasure craft or tugs, or for any one of hundreds of other possibilities. Because of this, much of our work is short run and produced in miscellaneous departments. We have established the progressive line setup wherever practical in both the machining and assembly areas, and we operate on a measured day work basis.

New emphasis was placed on our methods improvement program in the early part of 1951. It was proposed to train the machine shop and assembly foremen to recognize ineffective movements in manual effort. Once the foremen were trained they were expected to turn in method improvement proposals to the Methods Engineering Department for follow-up.

The proposals were large in number as well as good in quality at first. As time went on, however, the foremen tended to turn in a smaller number of proposals, and the proposals became less valuable. An analysis of the situation showed that the continued emphasis on manpower efficiency produced a negative effect in any decrease in standard time.

It was then proposed to add to the regular manpower efficiency report a report on the methods efficiency of each department to show the improvement effected. This addition was made at the beginning of 1953. It is now possible for a foreman to decrease the standard time and show an overall improvement in his department even though his manpower efficiency may fall a little below normal on occasion. This has proven to be a more positive approach.

It may be wise at this time to define some terms in order to establish a common language:

Current standard time is the pricing figure used on individual parts, subject to change whenever a change in method, process, design, etc. takes place. This figure is the sum total of all parts produced in a specified period, multiplied by each part's allotted current standard time.

ROBERT H. SCHROEDER, a member of the Detroit Chapter of S.A.M., has been a methods engineer for the Detroit Diesel Engineering Division of General Motors since 1951. From 1950-51 he was assistant to the superintendent of a Michigan power company, and he received his Mechanical Engineering degree from Michigan State College in 1949 with an industrial engineering major.

Actual time is the actual direct manpower hours used for productive purposes in a specified period. As an example, if fifty men were present for eight hours in a strictly productive department and each one were assigned to a productive task for the entire shift, that department would be credited with four hundred actual hours.

Budget standard time is a frozen figure established at the beginning of the budget year. For all practical purposes it is based on the current standard time prevalent at the beginning of the budget year. This figure holds steady for the entire year with a few exceptions which arise as a part is transferred from one burden center to another or changes from purchase to make during the year.

By dividing the current standard time by the actual time to produce the same parts, we arrive at the manpower efficiency.

$$\frac{\text{Current Standard Time}}{\text{Actual Time}} = \text{Manpower Efficiency}$$

By dividing the budget standard time by the current standard time, we obtain the method improvement efficiency.

$$\frac{\text{Budget Standard Time}}{\text{Current Standard Time}} = \text{Method Improvement Efficiency}$$

We are all striving for improvement. Method improvement efficiency has a tendency to accumulate or to grow as the budget year progresses.

By comparing manpower efficiency and the improvement efficiency, we arrive at the true performance of a department, an area, or the plant. In terms of time operating efficiency this can be expressed as the budget standard time divided by the actual time.

$$\frac{\text{Budget Standard Time}}{\text{Actual Time}} = \text{True Operating Efficiency}$$

Figure 2 shows how these indexes can give a true operating picture. The *top* of the solid bars represents the monthly *method efficiency* and are indicated by 100, 100.5, etc. The figures at the bottom of the solid bars denote the manpower efficiency average for the same period.

You will note that in January the method efficiency is 100%. This means then that no changes have been made in the standard time. When this situation exists, and only then, the manpower efficiency shows the true performance. The *lower part* of the solid bars, by the way, shows the improvement efficiency or the performance.

In March the current standard time has been decreased sufficiently to raise the method efficiency to 102.0%. The manpower efficiency is at 98%, but the combination of the two shows a performance of 100%. In April the operators probably have become familiarized with new assignments, and the increase in manpower efficiency along with the methods efficiency which has remained above par has given us a performance of 101.5%.

At times the case which appears in June may show up. This could be caused by a reduction of standard time on an estimated basis; a time study probably would prove that the time should have been decreased much more than was the case.

In this example the manpower efficiency and the methods efficiency are complementary to one another, i.e., neither detracts from the other.

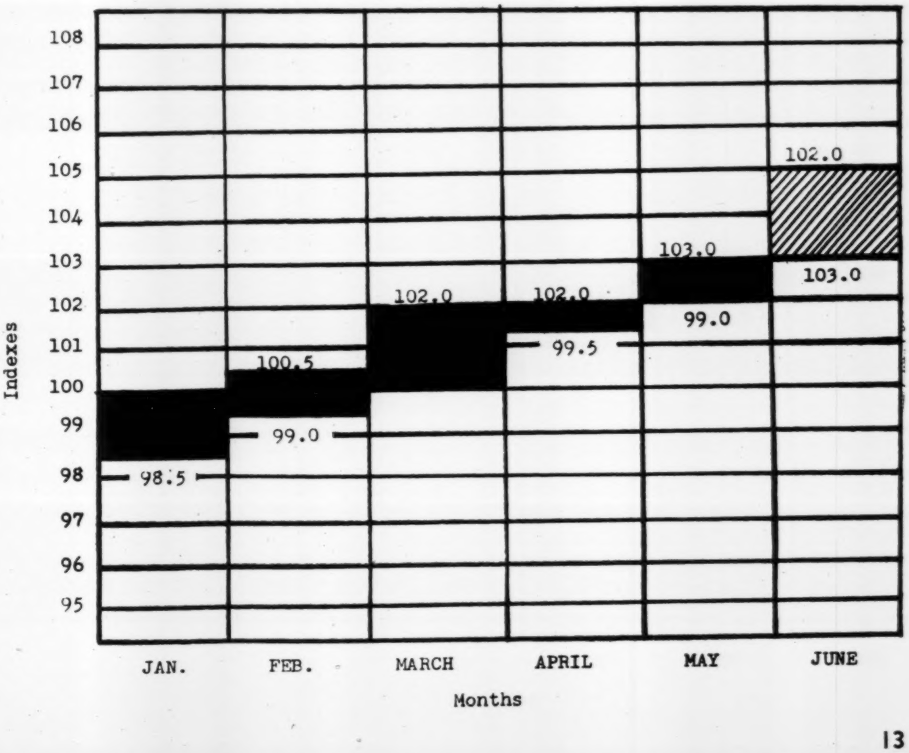
These figures are for a period of only one month each. We keep accumulative figures also which are probably of more value.

Let us now get into the rudiments of feedback as used in establishing these percentages.

The Inspection Department fills out a tabulating card with a count of the good pieces sent to stock in individual lots. At the end of each shift these cards are sent to the Tabulating Department. The Inspection Department also fills out a daily inspection report in triplicate. The Inspection Department keeps one copy; one copy is delivered to the general foreman in charge of the production department; and the third copy is given to the dispatcher.

The Tabulating Department receives the last of the cards for Monday's production by 8:30 A.M. Tuesday. The cards are processed to enable the Tabulating Department to report the total number of parts of a given part number completed by each individual depart-

FIG. 2 — The Operating Picture



ment on Monday. This report credits only one department with a particular part number as individual parts are tabulated only when they are completely machined and ready to go to stock. The report is delivered to the Accounting Department by 10:00 A.M. Tuesday. It is also posted at a central point where it is available to foremen and dispatchers.

Special Work Reports

Numerous parts are routed through more than one department. Our heat treat department, for instance, often performs only a few operations on a part at the beginning of the routing. The parts on which they expend labor in the second or third week of the month could quite conceivably be tabulated after the final operation on them by a machining department sometime the following month. Since this would affect both the daily, weekly, and possibly the monthly efficiency, a manual count system has been utilized for these departments. The inspector fills out an inspection report in triplicate. This report contains lot sizes of all parts leaving the department. When the part is leaving the department for the last time the inspector denotes this with a letter P in the card margin to show that the department should be credited with time on this part for efficiency purposes.

The dispatcher gets this report by 9:00 A.M. Tuesday and transfers the parts calling for time to a report which he delivers to Accounting by 1:00 P.M. Tuesday.

The timekeeper's office collects the clock cards and special work time tickets at the end of each shift. From these it makes a daily report on the "Labor Expense Distribution." This report includes the total productive hours used on Monday by each individual department. Accounting receives this report by 2:00 P.M. Tuesday. It is also posted for the foreman at this time.

The Accounting Department is now fully equipped to compute Monday's efficiency report. From the current time standard on each part and the total number of pieces produced on Monday they arrive at the credited standard hours. If a department is paid for a particular part by manual count, Accounting must be cautious not to duplicate this pay point when the part is machine tabulated. Occasionally situations arise which make it impossible to manufacture a part according to the established method. Perhaps a multispindle drill has broken down and to keep production rolling it is necessary to use a single spindle drill for a certain number of parts while it is being repaired. It is then necessary to issue a temporary current standard time to cover the department for efficiency purposes. Also, unusual situations which are caused by one department and call for extra work by a production department are covered by a work order to exclude it from the computation of efficiency. Both of the above times are added to the standard hours before dividing by the direct labor hours to obtain the daily efficiency.

The daily efficiency report is received by the distributing center on Wednesday morning and is available to foremen, general foremen, superintendent, and general superintendent in their mail box by 9:00 A.M. Wednesday.

The weekly report which includes Saturday production (if any) is available to the same people on Wednesday of the week following.

The monthly report which includes the methods improvement hours and the total improvement hours is available on the third working day of the following month. This report is distributed to the persons named above and to the standards department and works manager.

What action is taken as a result of this feedback of information? The fastest action is taken by the foreman himself. He knows what has been reported on tabulating cards from the daily inspection report. In the routing book he has a record of his current pay points on each part. On Tuesday morning he computes his current standard hours for Monday from the above information. The day shift foreman combines the figures from all shifts. The foreman turns the report of his department's efficiency in to the general foreman by 9:00 A.M. Tuesday. If the efficiency was low on Monday, he will have the answer ready when he turns his report in. The foreman and his general foreman can usually correct any matters which need attention. Normally low daily efficiency is due to a quantity of nearly finished or completely finished parts sitting short of the tabulating stage; the following day the department will run over 100% efficiency and average out.

At 2:00 P.M. Tuesday the foreman checks his actual production manpower hours against those posted for his department by the Timekeeper's office. If the two do not agree, he tracks down the error which either he or the time office has made.

At 9:00 A.M. Wednesday, the general foreman checks the daily efficiency report from Accounting with the report he has from his foreman. If a disagreement exists, the foreman is notified and again he is elected to trace the trouble down until mutual agreement is reached.

The general foreman usually is spurred to admonish the foreman if the manpower efficiency is subnormal for two weeks in succession. He then works with the foreman in an attempt to bring the curve back to normal.

Higher supervision take action on the efficiency reports when a subnormal accumulation becomes great enough to warrant their attention. Since the methods efficiency report is also included in the monthly report, higher management is more interested in the total improvement hours than in manpower improvement hours.

As a result of this, the foremen are developing true cost consciousness. First of all, a change of this nature takes time for everyone concerned to understand, then more time is required for conformance, and finally yet more time to show positive results. However, we of the Methods Engineering Department have seen varying changes taking place in individuals.

The Standards and Methods Departments are aided with the accumulative methods efficiency report also. This report brings to light the individual departments which need our help to decrease costs on various parts. Thus, a much truer picture is available and our goal is much easier to attain.

III Feedback On Downtime

Everett C. Reid
Superintendent
Manufacturing Engineering
Foundry and Heat Treat Plant
Ford Motor Company of Canada

The particular illustration of feedback to management presented here is based on a specific need which my company recognized in our mass production, highly mechanized foundry.

It was necessary for us to take drastic measures to control downtime. By "downtime," we mean inoperative periods where both equipment and manpower are idle. This need to control downtime, of course, is present in most mechanical production systems. However, it is extremely necessary in our type of foundry operation because of our closely integrated operations and the difficulty of storing such things as fragile cores, tons of molten metal, and sand moulds. You can imagine how embarrassing it might be to find yourself with five tons of molten metal—and no place to put it.

Several years ago, downtime in our plant was recognized as a major problem by our top management. We required a "non-financial incentive" for certain members of management, to reduce downtime to a minimum.

Of course we had the usual accounting records of labor downtime but these were *so general* and *so late* that the foundry was usually shut down for the week-end (or vacation) before this information trickled through to those who might have used it for control.

What we needed was *feedback*, and this is how we got it. In some ways it was very simple. However, sometimes it is the simple, uncomplicated things that really click in this modern age. I even have to admit that we do not need an electronic computer although I can see how a multi-plant organization could have numerous downtime centres feeding data to computers in order to provide information, segregated and calculated as to cost, to the organization centre for control and top management action.

Our feedback system is based on the principles that most supervisors *want* to do a better job, and that they will try to if they know what needs correction *soon enough* to make required changes in their routine planning.

In each case, the foreman of the moulding line or other production centre records, in detail, the downtime on his unit. His report contains the downtime in terms of elapsed time and detail on the equipment causing downtime. This information is typed in a downtime report the following morning and immediately issued to those responsible for downtime control.

The same information is combined with other data by department clerks to provide accounting distribution on:

1. *Excess labor cost—the product of elapsed time and the crew of men used.*
2. *Code, to classify services used to effect repair.*
3. *Distribution of excess cost to the department considered responsible.*

Both sets of data are then tabled at a daily "lost time" meeting at 1:15 P.M. of the same day. The foundry superintendent acts as chairman and the meeting is attended by foremen from all departments contributing to the downtime. A representative of Manufacturing Engineering acts as umpire when disputes arise.

The downtime reports are examined as to the frequency of downtime occurrence, its importance relative to cost, the reason for equipment failure, and the

***EVERETT C. REID**, a member of S.A.M. and co-chairman of the National Industrial Engineering Committee of the American Foundrymen's Society, started with the Ford Motor Company of Canada in 1935. He held various positions in general stores distribution from 1935-40, worked in payroll from 1940-47, in work standards from 1947-52, and has since been in his present position of superintendent of manufacturing engineering.*

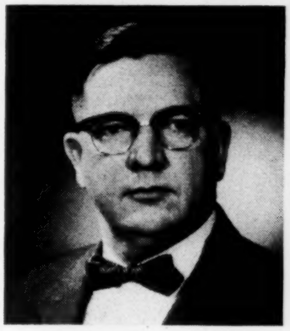
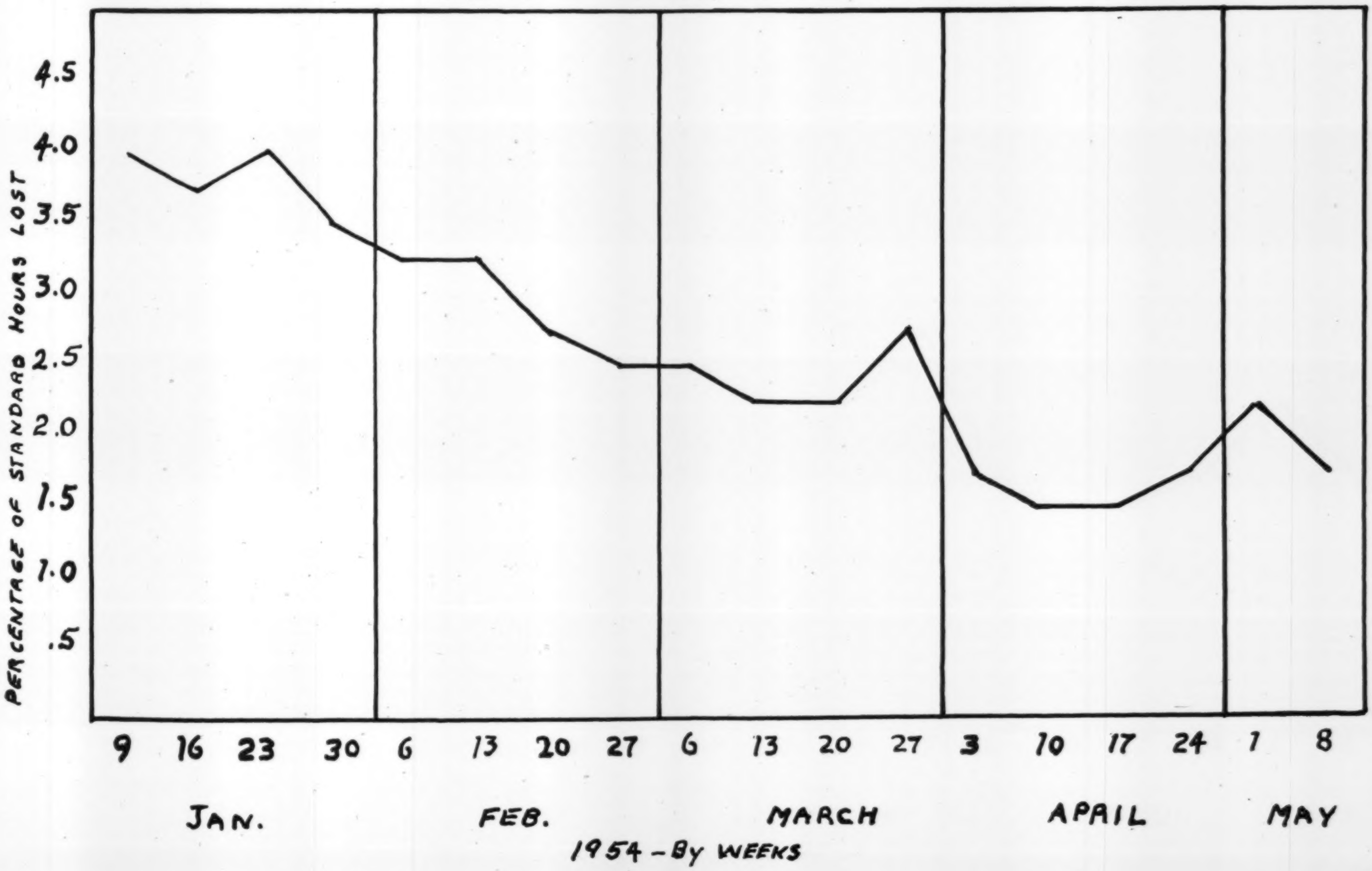


FIG. 3 — Reduction of Downtime



negligence factor as related to reason and responsibility. In this meeting, group decision determines most suitable corrective action, and the responsibility for excess cost is discussed.

Incentive to implement corrective action is provided by:

1. *Adverse publicity received by the person or function considered responsible.*
2. *Having the excess labor cost charged to the responsible function. This shows in published reports as poor performance to budget.*
3. *Graphs and charts illustrating accumulative effect of progressive corrective action on reduction of downtime. (Figure 3.)*

This simple system produces effective feedback of managerial control information to the extent that additional corrective action is possible, in most cases, before another day's run is made. Corrective action so obtained is dependent on a rapid, personalized means of communication through group participation.

IV Feedback On Machine Loading

Ernest W. Kosty
Systems and Procedures Analyst
Square D Company
Detroit, Michigan

A primary goal of production control is the effective use of machine capacity and manpower. This is essential to meet production schedules and insure efficient group operations.

Toward this end a method of determining machine loads by utilizing tabulating equipment has been developed in my company. This mechanization has provided for operation with considerably more information than previously was available with manual methods. The data was available, but it was a lengthy process to gather and summarize it.

The data as developed is presently in use in our special products plant. The machine load data for the fabricating groups is compiled through the following procedures:

We use routing sheets ("process sheets" is another term) as shop production orders for standard parts. The production order set is run by Production Engineering and sent to a parts planning group for assignment of batch number and release date.

The order set is sent to the production planning group in the plant. Here a date wanted is assigned for each shop group in addition to the fabricating groups. This is based on estimated average times. The order set is then sent to Industrial Engineering where it is filed by shop release date (orders are released only once a week except for rush parts). About two days prior to the release date to the shop, IE pulls the orders and analyzes them for series runs. At this point, the tabulating copy is sent to the Tabulating group for processing.

Tabulating punches and verifies the cards and places them in an open order file by part number. This is done daily. Each Monday Tabulating pulls from the open order file, the orders that were completed through the preceding Friday. From this adjusted order file, the following reports are run each Tuesday:

1. *Listing by Part Number.*
2. *Listing by Date Wanted.*
3. *Listing by Machine Number.*

The first two reports are run in triplicate and distributed to the plant general foreman, the fabricating group foreman and the production planning supervisor.

The third report is utilized by planning to compile a comprehensive analysis of the machine shop load. We have standardized on an analysis sheet to report the machine load on standards and specials.

At this point it is well to mention the procedure for special parts. On these parts, industrial engineering compiles a required from engineering drawings. These sheets are sent to Tabulating and thereafter specials follow the same procespecials' sheet as they estimate the time dure as standards.

The machine load analysis sheets are sent to the Factory Manager and his assistant, the Plant Superintendent and his assistant, the Production Manager and his assistant, the Industrial Engineering Section Head, the Planning Section Head, the General and Group Foremen, and the Tabulating Section Head.

Feedback of Information

From the tabulating reports and the machine load analysis, operating personnel are kept informed of the load ahead on each machine or machine class, and the open orders which are past due according to date wanted.

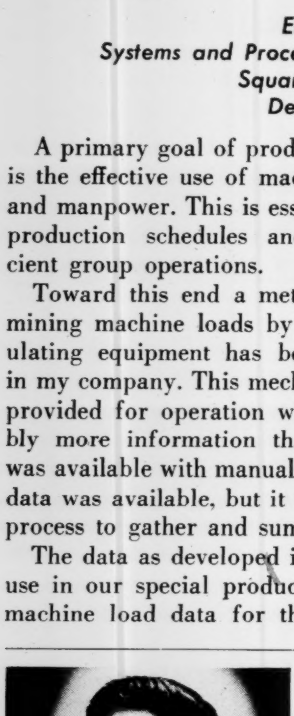
With these facts at hand, our production planning supervisor can analyze the situation in a number of ways:

1. *Hold a discussion with a foreman to determine why past due parts were not completed on schedule.*
2. *Should a machine or machine class appear overloaded, Planning requests Tabulating to run a listing of the open orders routed to the machines in question.*
3. *These parts are checked for routing, and corrections in the routing sheets are made where required.*
4. *The work-in-process is analyzed and the appropriate corrective action is taken.*

Though our application of machine loading is still in the development stage, we have seen positive results in terms of:

1. *Better coordination between production planning and the fabricating groups. The tabulating reports enable each group to work out compromises and alternative actions to correct the situation shown by the reports.*
2. *The foreman and general foreman are now in a better position to determine manpower requirements since the group load is projected five weeks ahead.*
3. *The general foreman has had occasion to use the machine load data to answer a union grievance.*

Overall, this procedure is enabling our operation personnel to keep in close touch with the performance in each area. As this method is extended into other phases of production control, we feel even greater benefits will be derived.



ERNEST W. KOSTY received his B. S. degree in Industrial Management from Lawrence Institute of Technology in 1953. Since then he has been with the Square D Company in Detroit as a systems and procedures analyst, working toward mechanization of procedures through punched cards and electronic computers. He is a member of S.A.M.

V. Feedback to Employees

What Business Can Learn From Baseball

Theodore R. Wolf
Industrial Consultant
Ridgewood, New Jersey

THEODORE R. WOLF graduated from Dartmouth in 1930. After several years with General Motors, he held positions as Personnel Manager of American Writing Paper Corp., Industrial Relations Manager of Irvington Varnish & Insulator Co., Headquarters Associate with Training Within Industry, and Training Supervisor and Personnel Manager of Moore Business Forms. For the past six years he has been an Industrial Consultant.

Last winter a millwright told his foreman, "Joe, did you see what that little gear cost that I put on No. 2 Machine yesterday? $83! I don't see how we stay in business if things cost that much."

The foreman replied, "Tom, I've been telling you for eleven years that this stuff is expensive. Now you can see for yourself how much it costs."

What had made Tom cost conscious after eleven years? He was now able to read, by noon today, the detailed cost of labor and material for every repair job he had worked on the day before. The same information was fed back to the other 780 maintenance men in the mill where Tom worked. (Fig. 4, page 18)

Such things are practical today because of recent developments in machine accounting. One new tabulator, for instance, can print 150 lines of type in one minute, or 300 characters per second! Such rapid reporting of information to the men who do the work opens up exciting possibilities in getting employees genuinely interested in their jobs. Is it reasonable to expect men to be interested in economy if they never see any cost figures? Or to worry about quality if they are not given measurements of how well they do their work?

In this area business can learn from baseball. In fact, if businessmen were to make general use of just one essential ingredient of baseball I believe it would do more to improve our standard of living and our labor-management relationships than any other single step that could be taken!

Baseball's Magic Ingredient

What is this magic ingredient of baseball? It is so taken for granted in the world of sports that I'll wager the next person you meet won't mention it if you give him the proverbial three guesses. But would there be millions of baseball fans if the number of runs scored in each game were withheld from the fans, and from the players themselves? If there were no pennant races, no batting averages, no record of home runs and runs batted in, where would baseball be?

The magic ingredient of baseball (and all team sports) is *scorekeeping*, including all the means of measuring how well the players, individually and collectively, perform their jobs. This is *feedback* in its most familiar form. It is prompt, accurate, easily understood, and it is fed back not just to the front office but to every player. With no measurements of any kind baseball would be merely a demonstration of how well eighteen men can throw and hit and catch a ball. Instead of 86,563 fans watching the Yankees and Indians last September 12 the "teams" would be lucky to draw 86 spectators. There would be a lot of ball parks for sale, cheap. No team sport, amateur or professional, could exist without some way of keeping score. Without scorekeeping, amateur players would have no interest, and in professional sports there would be no cash customers.

How Am I Doing?

Yet in industry we ask men and women to work eight hours a day for forty or fifty years, and millions of them are never given any "score" as to how well they do their work. Is it any wonder the average employee is not interested in his job? Lawrence Appley, President of the American Management Association, tells about an attitude survey conducted in a large company: "The outstanding desire most generally expressed by the individuals questioned," reports Mr. Appley, "was for more detailed and accurate knowledge on one particular subject: 'How am I doing?' . . . If the extent to which individuals are kept informed of their progress, and the skill with which this is done were to be tripled in every organization in the next twelve months, the resulting impact upon company performance, our economy, and society in general would be almost beyond comprehension." [1]

Practically any repetitive activity becomes monotonous after a while unless some measure of accomplishment is provided. Sports and games we play for fun, but without scorekeeping they wouldn't be fun. They'd be so deadly dull no one would watch or play them. There is little interest when the athletes are just warming up. There is no feedback, nothing to feed back. But when baseball players start keeping score, grown men become so "interested" that sometimes the plate umpire is glad he is equipped with face mask and chest protector!

Has industrial scorekeeping been tried? It has, and with spectacular results. A large New England mill applied the principle. Within five years the quality of the finished product had improved from the poorest in the country to the best. As usually happens when quality problems are solved, production increased (in this case over 200 percent). Profits went up. And when the 300 maintenance men were given yesterday's repair costs they saved $180,000 a year in maintenance materials alone. All this improvement was not due exclusively to industrial scorekeeping, but the manager says the biggest contributing factor was the increased interest in their jobs by over 1,000 employees who were given quality or cost "scores" every day. A thousand really interested people can suggest a lot of improvements, turn loose a tremendous amount of creative energy, and have a lot of fun doing it!

Industrial Scorekeeping

With the introduction of daily quality records, a Canadian newsprint mill greatly improved the uniformity of the weight and moisture content of its paper, at a considerable saving to the company and furnishing a much better sheet to the customer. When the daily

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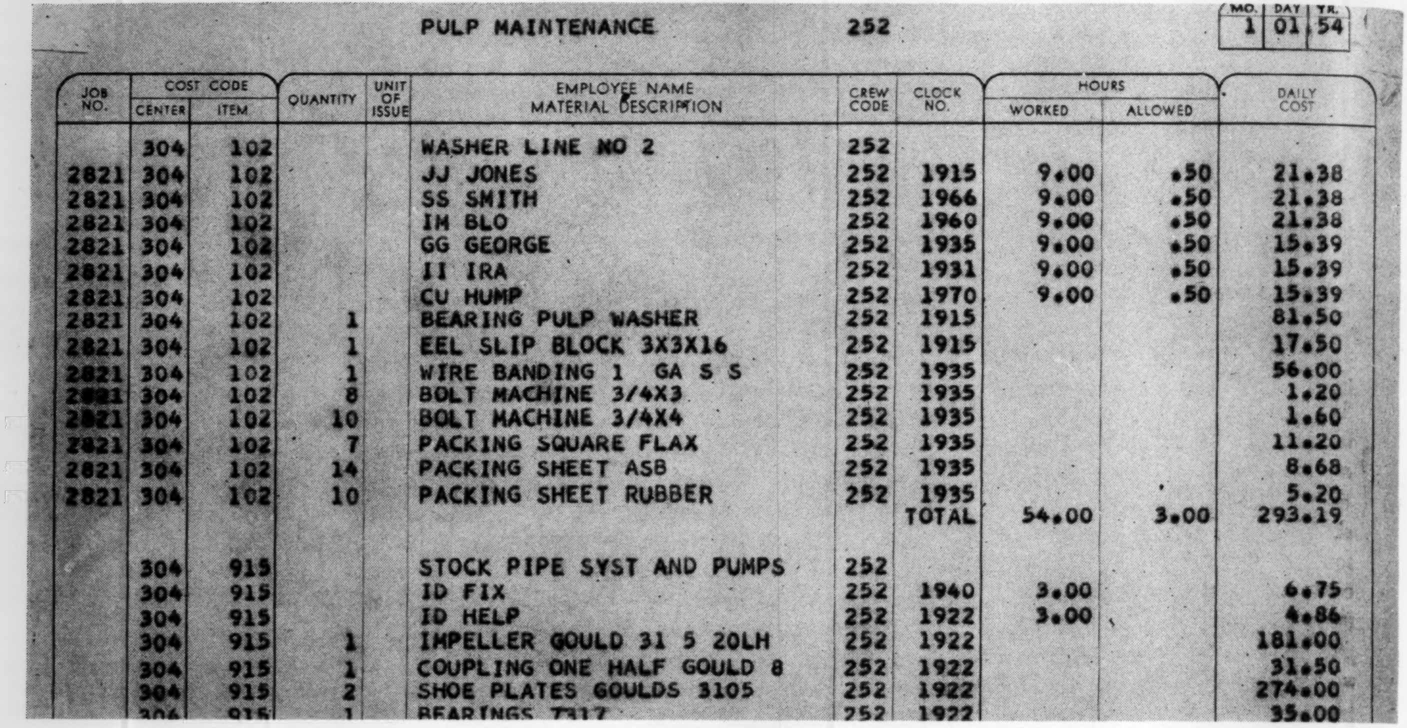
[1] *Management News*, November, 1954.

DAILY MAINTENANCE COSTS



PULP MAINTENANCE 252

MO.	DAY	YR.
1	01	54

JOB NO.	COST CODE		QUANTITY	UNIT OF ISSUE	EMPLOYEE NAME MATERIAL DESCRIPTION	CREW CODE	CLOCK NO.	HOURS		DAILY COST
	CENTER	ITEM						WORKED	ALLOWED	
	304	102			WASHER LINE NO 2	252				
2821	304	102			JJ JONES	252	1915	9.00	.50	21.38
2821	304	102			SS SMITH	252	1966	9.00	.50	21.38
2821	304	102			IM BLO	252	1960	9.00	.50	21.38
2821	304	102			GG GEORGE	252	1935	9.00	.50	15.39
2821	304	102			II IRA	252	1931	9.00	.50	15.39
2821	304	102			CU HUMP	252	1970	9.00	.50	15.39
2821	304	102	1		BEARING PULP WASHER	252	1915			81.50
2821	304	102	1		EEL SLIP BLOCK 3X3X16	252	1915			17.50
2821	304	102	1		WIRE BANDING 1 GA S S	252	1935			56.00
2821	304	102	8		BOLT MACHINE 3/4X3	252	1935			1.20
2821	304	102	10		BOLT MACHINE 3/4X4	252	1935			1.60
2821	304	102	7		PACKING SQUARE FLAX	252	1935			11.20
2821	304	102	14		PACKING SHEET ASB	252	1935			8.68
2821	304	102	10		PACKING SHEET RUBBER	252	1935			5.20
							TOTAL	54.00	3.00	293.19
	304	915			STOCK PIPE SYST AND PUMPS	252				
	304	915			ID FIX	252	1940	3.00		6.75
	304	915			ID HELP	252	1922	3.00		4.86
	304	915	1		IMPELLER GOULD 31 5 20LH	252	1922			181.00
	304	915	1		COUPLING ONE HALF GOULD 8	252	1922			31.50
	304	915	2		SHOE PLATES GOULDS 3105	252	1922			274.00
	304	915	1		BEARINGS T317	252	1922			35.00

Figure 4. A representative sheet showing labor and material expended by one craft during the previous day.

records were discontinued, quality slipped right back almost to where it had been before. It stayed there, too, until the reports were again published.

A plant on the Pacific Coast started from scratch giving all the employees measurements of how well they did their jobs. In an incredibly short time the men were turning out a quality product that for years has been regarded in the industry as *the* standard of excellence and uniformity.

These company records are, of course, the result of more conscientious effort by hundreds of individual employees. For example, the old-time fireman became so interested in his daily record of boiler efficiencies that he climbed a forty-foot ladder to adjust a damper before opening the furnace door. He found less air was thus sucked in to cool the fire. His suggestion for a floor control was immediately adopted on all the boilers.

Examples of Feedback

Again, a pipefitter told the master mechanic, "Jack, I saved $70 today." The week before he had put a split flange on a blow valve, and was amazed to see on the next daily report that the flange cost $80. So this time he found a flange out in the Salvage Yard, had it cleaned up (for $10), and used it instead of another new one.

There was a brick mason who asked for and got credit on scaffold lumber which he turned back to the storeroom after removing the nails.

Interested Employees

George was apparently more interested in patronizing a bar than he was in a promotion. But when he saw daily "batting averages" applied to the next job, he became as interested in the promotion as he had been in his extracurricular activities. He asked his wife to teach him the simple arithmetic involved and applied for the next vacancy. George more than held his own on the new job.

Why did these people respond as they did? Primarily because they became really interested in their work for the first time in their lives. It doesn't take a psychiatrist to know that interested people do better work than bored people and more of it. Financially, there was no immediate reward in the sense of piecework or bonus incentives. However, the companies they worked for inevitably became more prosperous as productivity increased, and wages, arrived at through collective bargaining, were soon among the very highest in the industry.

Measurements have always intrigued men. The very word "man" comes from the Sanscrit root implying the idea of measurement, along with "month" and "moon." Man has been called "the measuring animal." His urge to measure follows him literally from the womb to the tomb. When John Doe, Jr., is born the first question John Doe, Sr., is asked is "How much did he weigh?" And whoever read an obituary that didn't give the age of the deceased? Between those events John is constantly measuring. Every day he is influenced by time, distance, miles per hour, temperature, volume, value. He even measures such intangibles as personality, intelligence, and popularity.

The way in which measurements are applied to jobs can make the difference between arousing the creative interest of the men and causing a grievance. Basically, there are three ways of measuring work: quantity, cost, and quality.

Reporting Quantity

Straight *quantity records* probably are the ones most commonly found in industry. They can be used to arouse interest, as Charlie Schwab proved with his famous figures on the floor. Other companies have proved it with incentive systems. But quantity measurements, unless accompanied by quality and/or cost, have unpleasant speed-up connotations in the minds of too many employees. Furthermore, when quantity is emphasized, quality is apt to suffer, and in today's highly competitive market that could be disastrous!

Cost Reports

What about *cost records*? They can get complicated enough to furrow the brow of a mill manager, or even a CPA, so why inflict them on a pipefitter who doesn't know his assets from his liabilities! There need be no confusion here if each level in the industrial hierarchy is given only those costs for which it is responsible. This means that the maintenance man, for instance, gets the cost of the labor and materials he uses. It is better not to confuse the issue with overheads, depreciation, etc. Cost records usually involve quantity, but in a form that is not only more palatable but is ideal for educating employees in the facts of our free enterprise system. And the more *facts* the employees have (presented in understandable form) the less susceptible they are to the lure of promises which can never be kept.

Reporting Quality

Quality records probably do more to bring the game spirit to the job than any other kind. They can be used in a wide variety of ways, and the more variables they measure the more interest they arouse. They can be translated into percentage of perfection figures, just like baseball batting averages. And they can become just as much a source of pride to the worker as Stan Musial's average at the plate has been to him over the years. This means measuring how well a man does, not how poorly. They say a ball player "bats .295," not that he "misses .705."

Quality information should provide a specific objective to shoot at, not just a "range." For instance, if a paper mill is trying to manufacture "20 pound" paper (the weight of the sheet you write letters on), but the customer will accept a variation from 19 to 21 pounds, the objective should still be 20, not just anywhere within the acceptable limits. Make 20 pounds 100 percent; a tenth of a pound above or below could be 95 percent, two tenths 90 percent, etc. Use whatever scale fits the particular problem. It's no fun merely hitting between 19 and 21, which any good machine crew should do consistently. It's like a marksman getting credit for a bull's-eye if he hits any part of the target.

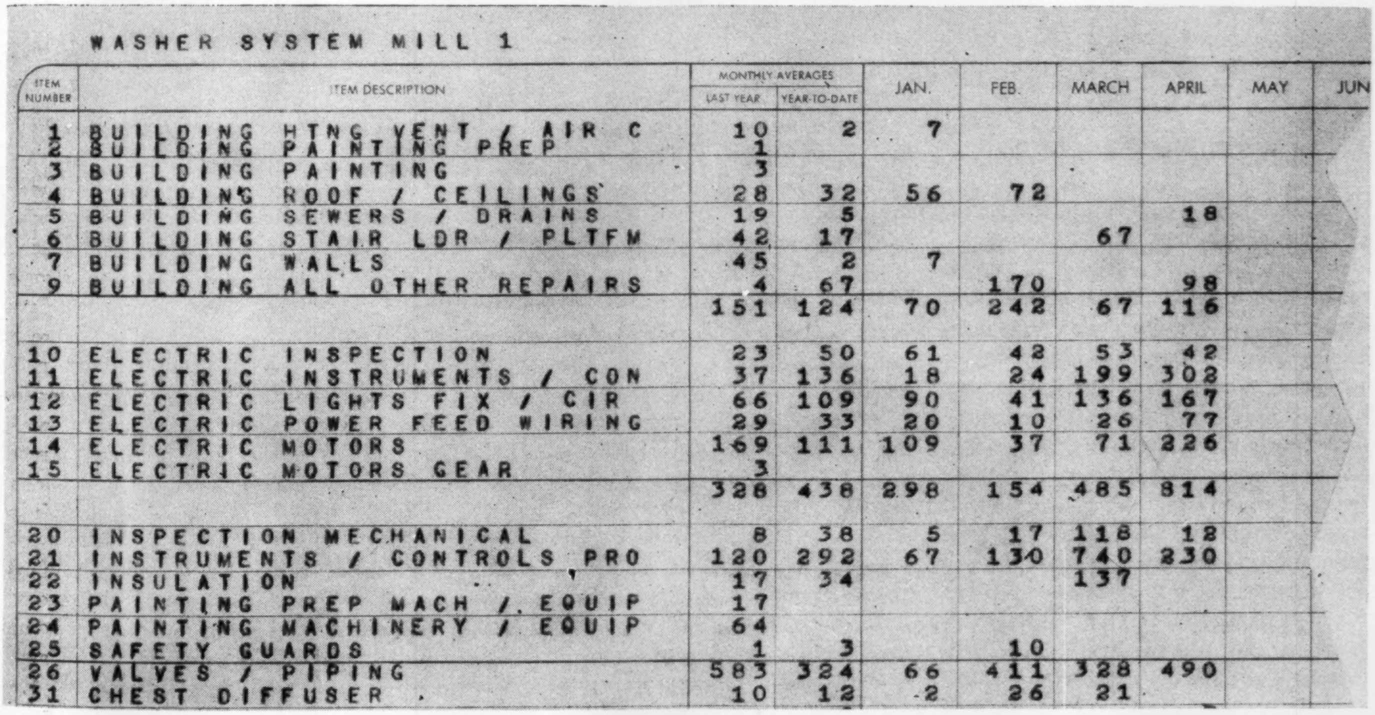
When records of this kind are first put up on the departmental bulletin boards, there is apt to be quite a variation between the individuals or groups being evaluated. Invariably, however, these differences become minimized. The better employees improve, but the poorer ones show greater improvement.

Self Discipline

The whole effectiveness of such quality or cost records can be nullified if the information is used by supervisors to put men on the spot, or to get rid of sub-par employees. The purpose should be to let the men know how they are doing on a factual, unemotional basis. They then develop self discipline, which is the most effective kind. I used to bowl on a company interdepartmental team. The team captain never had to "drive" us. The score was all the incentive we needed to do the best we knew how. Quality records in industry can, by the same token, make the foreman's job easier and pleasanter.

Note that quality factors measured are not arbitrary whims. They are dictated

MONTHLY MAINTENANCE SUMMARY



WASHER SYSTEM MILL 1

ITEM NUMBER	ITEM DESCRIPTION	MONTHLY AVERAGES		JAN.	FEB.	MARCH	APRIL	MAY	JUN
		LAST YEAR	YEAR-TO-DATE						
1	BUILDING HTNG VENT / AIR C	10	2	7					
2	BUILDING PAINTING PREP	1							
3	BUILDING PAINTING	3							
4	BUILDING ROOF / CEILINGS	28	32	56	72				
5	BUILDING SEWERS / DRAINS	19	5				18		
6	BUILDING STAIR LDR / PLTFM	42	17			67			
7	BUILDING WALLS	45	2	7					
9	BUILDING ALL OTHER REPAIRS	4	67		170		98		
		151	124	70	242	67	116		
10	ELECTRIC INSPECTION	23	50	61	42	53	42		
11	ELECTRIC INSTRUMENTS / CON	37	136	18	24	199	302		
12	ELECTRIC LIGHTS FIX / CIR	66	109	90	41	136	167		
13	ELECTRIC POWER FEED WIRING	29	33	20	10	26	77		
14	ELECTRIC MOTORS	169	111	109	37	71	226		
15	ELECTRIC MOTORS GEAR	3							
		328	438	298	154	485	814		
20	INSPECTION MECHANICAL	8	38	5	17	118	12		
21	INSTRUMENTS / CONTROLS PRO	120	292	67	130	740	230		
22	INSULATION	17	34			137			
23	PAINTING PREP MACH / EQUIP	17							
24	PAINTING MACHINERY / EQUIP	64							
25	SAFETY GUARDS	1	3		10				
26	VALVES / PIPING	583	324	66	411	328	490		
31	CHEST DIFFUSER	10	12	-2	26	21			

Figure 5. A representative sheet showing the cost of maintaining every significant piece of equipment in one department of a paper mill for each month, with average for year-to-date and last year's monthly average. Details of labor and material are available at a glance on supplementary sheets.

by the ultimate boss of all business, the customer. If the employee understands this he will receive the best possible education in the need for maintaining quality standards, especially if he is asked to help work out what to measure and how to measure it, as in Allan Mogensen's "consultative approach."

Some companies are forever putting on campaigns to reduce waste, improve quality, avoid accidents, cut costs, increase production. They may invent slogans, put up signs, stage pep talks, give prizes. Such efforts get results—for a while. But the appeal is usually emotional, and emotions refuse to remain at a high pitch for very long. So the question is first how to arouse interest and second how to sustain that interest for months and years.

Here again is an important contribution baseball can make to business: give the daily "batting average," but also the average-to-date figure wherever possible. Ted Williams knows his daily average will range from .000 to an occasional 1.000, but it's that .300-plus average-to-date that sustains his interest throughout the entire season. The same psychology applies to industrial scorekeeping. So post the daily records with the best man (or group) at the top based on the average-to-date figures if you want continuity of effort and interest. And in order not to discourage the less experienced employee, start accumulating the to-date averages fresh at the beginning of each month.

Worth the Trouble

Sounds like a lot of trouble to go to, doesn't it—"just" to get employees interested in their jobs? It isn't too much trouble for baseball clubs to keep statistics that are far more elaborate than those needed for industry. I don't know how many statistics the clubs keep, but in the 1953 World Series alone there were no less than 98 records either broken or equalled by the Yankees and Dodgers! How many other records that weren't caught up with, the World Almanac doesn't mention.

But, someone will say, baseball *has* to give measurements to arouse the interest of the public and the players whereas business does not. No one has to play baseball—or football or golf or bridge or poker—unless he wants to, but most men do have to earn a living in industry whether they enjoy it or not. True. But it is short sighted of management to take advantage of this fact. Management should be as interested in selling our free enterprise system as the Dodgers are in selling tickets to Ebbets Field. Housewives, schoolteachers, farmers, the employees themselves, the corporations, *everyone* would benefit as the products of industry became better in quality and lower in price—as they inevitably would if manufactured by men and women who genuinely enjoyed their work.

Obstacles to Feedback

Admittedly some jobs are harder to "score" than others. But it is surprising what can be measured with a little ingenuity. If a job is so mechanized that the operator has no quality or cost variables whatever under his control, at least departmental costs should be available for the group of which he is a part. If that is not feasible perhaps the scope of the work should be enlarged—as was done at IBM in Endicott, N. Y., when operators were given the additional responsibility of setting up their machines and later inspecting their own output. Heresy! But it increased production, improved quality, and lowered costs.

Why isn't industrial feedback of information more commonly used? I think there are four main reasons:

1. *Too simple.* In these days of nuclear physics and statistical controls executives are apt to feel that any idea that is so simple can't be much good. But the Golden Rule is simple and it invariably works if used wisely.

2. *Too many bosses still like to boss.* If each employee, or group of employees, had factual information about the variables under his control, there would be less arbitrary bossing and more teaching.

3. *Too many management men think the employee is "different,"* that he is not interested in improving production and lowering costs whereas the department head *is* interested ("company minded," they call it). This is all too true in many organizations. But the business executive, unlike the employee, is usually in a position to see to it that he is supplied with measurements of the quantity, quality, or cost variables over which he has any control, balanced to the penny, and on time, too, or midnight oil will burn for the office manager and his crew. He doesn't stop to think that the employee would be just as interested if he were given prompt information about the fewer variables he controls.

4. *Too expensive.* It used to cost a lot of money to give detailed information to hundreds (or thousands) of employees. But recent developments in machine accounting now make it possible to give vastly more information to many more men for very little extra cost. In the case of those 780 maintenance men, for instance, the same cost information fed back to them is reshuffled and given to each production supervisor to show him the cost of his repairs for the previous day; and from the same source records, monthly figures are compiled to show the cost of maintaining every functional piece of equipment in the plant. Can't afford to? Many progressive companies are coming to realize that they can't afford not to. (Fig. 5, page 19)

The famous Hawthorne Experiment at Western Electric brought the industrial psychologists to this conclusion: "The worker is driven by a desperate inner urge to find an environment where he can take root, where he belongs and has a function; where he can see the purpose of his work and feels important in achieving it." [2] Industrial scorekeeping, whether an individual or a team score, helps to satisfy these "desperate inner urges."

The Cobbler's Grandson

My grandfather used to buy his shoes from an old cobbler in Delaware who made the entire pair of shoes himself. Pride of craftsmanship was so strong that grandfather used to get a dirty look from the old fellow if he wore a new pair out in the rain without rubbers. That cobbler's grandson may perform just one dull operation in a modern shoe factory, and wouldn't know one of his customers from a wooden Indian. Mass production is certainly here to stay. But so is industrial indifference and dissatisfaction, unless business executives assume the moral obligation to give their employees some substitute for the pride of craftsmanship that is no longer inherent in the job itself. END

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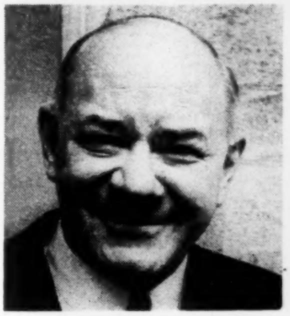
[2] As reported by Stuart Chase in *Readers' Digest*, Vol. 38 No. 226, Feb., 1941.

L. T. WHITE joined Cities Service Petroleum, Inc. in 1930 as Manager of Consumer Services, and has been Manager of Business Research and Education since 1943. He is a member of S.A.M., the National Society of Sales Training Executives, and founder and trustee of the Petroleum Education Foundation. He has addressed many conventions of educators, trade associations, and sales executives to help strengthen small business enterprises.



Strengthening Small Business Management

By L. T. White, Manager
Business Research and Education
Cities Service Petroleum Inc.

"The American economy prospers when small business 'starts' exceed the number of small business 'stops'." L. T. White discusses the reasons for small business failures, some of the significant findings about the small businessman, and the kinds of educational and developmental assistance which various organizations have to offer the small businessman to help him learn for himself.

SMALL businessmen have their ups and downs, their success and their failures, and need stimulation, guidance, education, and assistance as much as do the managers in our larger industrial or commercial concerns. In this paper I will present some of the facts about small businesses, what kind of persons start such enterprises, what their motives are, what skills and knowledge are required, and what resources and aids are available for improving small business management, particularly in the line of education.

The managements of our larger businesses are vitally concerned with their sources of supply, which are usually small businesses. Much of Sears & Roebuck's success can be credited to the management assistance which they give to thousands of small manufacturers.

Many of you are keenly concerned with those who distribute your product to consumers. Small business dominates in distribution. That's because it is the most flexible and accommodating for that rugged man who has the freedom to choose what, when, and whether he'll buy.

A large part of the success of General Motors lies in the work it has done for thirty-five years to make better business managers of the men who sell and service Chevrolets, Buicks, Oldsmobiles, Pontiacs and Cadillacs. Now, Ford and Chrysler propose to outdo General Motors in their aid to retailers. The resale value of an automobile depends more on the dealer's ability to manage than it does on the material or workmanship used in making a car.

The American economy prospers when small business "starts" exceed the number of small business "stops." Vacant stores usually give a basis for predicting unemployment in manufacturing.

All of us should know how much distributive enterprise is needed to sell what we can grow or make. For each manufacturing establishment, there must be at least one wholesaler, seven retail stores, seven service concerns, five outside salesmen and forty-five distributive employees.

This is one of the most prosperous years in the history of our country. That's because distribution is able to sell the products of factory and farm. One thousand small business concerns close their doors daily. Slightly more than a thousand new men reopen those doors every day. That's why we are prosperous and fully employed—the small business "starts" exceed the "stops."

However, the "stops" are costly in money and morale. When a man has to give up running his business, he rarely blames himself. Dun & Bradstreet have reported the reasons for business failure as explained by the failure. Opposite his statements, they report the opinions of his customers, suppliers, and competitors. There is a vast difference. The business failure says he had to quit because of lack of capital. Others say he failed because of lack of management ability.

An old-time philosopher said, "People are usually down on what they're not up on." The statements of the failure are a matter of concern. Multiply 400,000 business stops by ten years, and you have 4,000,000 business knockers. Since 1935, 8,000,000 have become business critics. Multiply each by four (wives, children and parents) and you see why there is a vast horde of business distrusters.

Henry Ford II, speaking to the American Newspaper Publishers Association

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From a talk given before S.A.M. Asheville Chapter, May 15, 1955.

on April 29th, said, "Some of this (Russian) indifference or antagonism has crept into our thinking here. Labeling of middlemen, retailers and salesmen as parasites is wrong. We talk of the high cost of distribution—we should know of the value added by distribution."

If we can find ways to strengthen small business management, we can:

1. Build public confidence.
2. Reduce consumer fears.
3. Increase employment.
4. Reduce consumer costs.

Those objectives deserve some thought.

Nature of Small Business

What is small business? The Federal Reserve Bank defines a small business as, "One which is independently owned and operated but is not dominant in its field."

There are 4,200,000 business enterprises in this country, counting the newsstand on the corner as one and General Electric as one. More than 90 percent are small business, and over 70 percent of small business is in distribution. Your companies may employ thousands of people. But the United States Employment Service averages reveal that small business is in the great majority. The average manufacturer has sixty employees; the wholesaler, nine; retailers, four; and service establishments, two employees.

Proprietors predominate in enterprises which are independently owned and operated. Joseph M. Dodge, Chairman of the Detroit Bank, and Special Assistant to President Eisenhower for Foreign Economic Policy, told the Detroit chapter of S.A.M.:

"As you all know, there was a time when the manager of a business usually was its proprietor. He conducted it according to his own ideas. He learned mostly from personal experience. If the business was successful, he was well-paid. If it failed, he took the sacrifice in personal income and capital."

We should remind Mr. Dodge that these are *still* the times when the manager of a business is its proprietor, and the modern business manager *continues* to pay for his mistakes with his own money.

In Wall Street there is a quick question which brings out whether a man is qualified to manage important investments: "Did he ever meet a payroll?" This means the employees were paid, even if he did without pay himself.

"The man who risks, so that his customers and employees may be secure," well expresses the essential characteristic of small business owner-managers.

Strengthening small business management has concerned educational, government, and research people for years. It was about ten years ago that the Committee for Economic Development published its famous "Problems of Small Business." That started many to thinking.

There is a group of earnest men who have devoted years to the study of small business management. They are staff and advisory members of the Small Business Administration and the U. S. Department of Commerce. They have discovered and tried ways to help small business men or women.

You will be interested in some of their findings. They are good to know wherever there is concern lest small business falter and fail:

1. *What people start their own businesses?*

I use the word "people" advisedly because it includes both sexes. Women are demonstrating their ability and desire to start small business enterprises at a steadily increasing rate. A recent survey was made of the stores on Madison Avenue in midtown New York, known as the creative center of the world. More than 80 percent of all the establishments were shown to be owned or controlled by women.

The kind of people who often start their own business can be grouped into two types:

(a) The *mechanic,* who thinks he can make a better product and wants the profit, but lacks the ability to sell.

(b) The *salesman* who thinks he has a following, but hates the bother of filling orders.

Both of these types detest the paper work necessary to keep records, though the good manager must have good records, and both have much to learn about running a successful business.

2. *What should the goal be?*

The true aim of establishing and building a business becomes clear with an enlightened view of "business" such as, "Business includes all activities which help people to live better." The process of helping includes advertising, displaying, demonstrating, etc. All may be condensed into one word—"Selling."

Those who should go into business are "Those who like to serve and are able to sell." What is meant by "service," a word which has been loosely applied to thousands of acts and things? "*Service*" is the opposite of "*selfishness.*"

Successful businessmen must have the spirit of service and the zeal to sell in the interests of others. Those who go into business selfishly to make a profit will probably fail. They must recognize that profit is the by-product of benefit. Such men have confidence in their ability to produce more benefits than the price.

When men know what good they are doing for others, they have the enthusiasm and courage to succeed.

3. *What motives are strongest?*

Thousands of small businessmen in distribution have been asked, "Why did you give up a job to start your own business?" Their answers universally reveal their motives to be: independence, resources, respect, profit, and permanence.

Some people are surprised when they see the profit motive in fourth place among these answers. Once the wife of a distributor in Scranton was asked, "How does it seem to be married to a distributor?"

She answered, "Wonderful," but added, "I've never been married to any other kind of man." She was advocating the wonderful institution of matrimony. She continued with this remark: "I wish once when I asked my husband for some money for the children or the home, he wouldn't say, 'OK, but we could use the money to better advantage in the business.' "

Both the small businessman and his wife are content to take less out of the business than they put into it.

4. *What skills are required?*

Administrative ability must be equal at the top of small business or big business. People in both types must have general management skill. Most small businessmen start in operations, then grow into management.

The skills required are:

To see a business opportunity.

To make decisions and then sleep at night.

To plan and schedule.

To measure results and admit mistakes.

To make changes, though painful.

In Maine, an outstandingly successful

small businessman was asked, "Do you recall the incident that changed you from a fair business manager to a good one?"

He answered, "Yes, it happened in a management course in Boston. The advisor said, 'Your office records should sing. If you have people preparing your figures who can't make them sing, you'd better get others who can.'

"My bookkeeper was wonderful to her father and mother. She had never taken time to cut her hair, to learn about silk stockings, or get married. Around the office, she either sniffled with a cold, or fretted over some personal problem.

"When it came time to close the books, there was tension. When we tried for the balance, I just had to leave. I rarely dared ask her how we stood.

"I went back, and told how I planned to increase the amount of business, which would double the pressure on the office, and add forecasting to the other accounting work.

"She didn't like the thought of these additional activities. Then I proposed to help her get a job where they took things easier. In addition, I paid her full salary for six months. She was glad to accept."

The man who made this painful change was asked, "What's the old maid bookkeeper doing now?"

He answered, "She's happy as a bird. She's working for a fellow who doesn't care anything about his records—where he stands or where he's going."

"Management" and "Operation"

As the study of small business management proceeded through the years, bewilderment gradually disappeared. Clarity began to come when "operation," or the work of the business, was distinguished from "management," or the study and planning part of business.

Then it was found that management could be separated into five phases. I am speaking of the running of distributive enterprise when I say that management problems can be separated into the five M's: markets, money, men, methods, and merchandising.

Such analyses have simplified the study and teaching of small business management. In the petroleum industry, there are approximately 15,000 wholesale distributors. They have many problems fogged by obscured evidence. Gathering 103 troubles under the five M's enabled them to be examined carefully by jobbers themselves meeting in small groups to learn. Their experiences in discussing their problems in twelve state associations and in twenty institutes during the past three years have been significant.

Modern small business has many problems. More management knowledge has been assembled and new ways of absorbing it have been evolved. Hence today's small business proprietor has ways and means which were unknown to his grandfather.

Obstacles To Study

Why is it that more small businessmen do not seek this new knowledge?

It may be helpful to observe that:

1. Some small businessmen are not aware of what they don't know. They say there is no time even to read, let alone study.

2. Some are hard to instruct. They say that education is for children and training for employees. They resist instruction by suppliers. They say, "He teaches me only what's good for him."

As you look back over centuries of business management failures, you wonder why men don't profit from the mistakes of others. It's safe to say, "We learn from history that we don't learn from history." We have to go at learning for ourselves, put some time into it with others, and see what we get out of all our efforts.

SAM Chapter Performance Awards Report

July 1, 1954 - May 31, 1955

Philadelphia	14618	Montreal	3848
Lancaster	9772	Clearing	3788
Washington	8959	Raritan Valley	3599
Binghamton	8319	Portland	3551
N.E. Penna.	8121	Madison	3530
New Haven	7038	New York	3352
Northern N. J.	6918	Fox Valley	3149
Boston	6606	Wilmington	2956
Baltimore	6123	Western Mass.	2841
Alabama	6009	Columbus	2790
Kansas City	6009	Detroit	2743
Bridgeport	5858	Western N. C.	2733
New Orleans	5762	Central Penna.	2714
Nashville	5739	San Francisco	2669
Milwaukee	5727	Reading	2589
Trenton	5440	Central N. Y.	2394
Worcester	5262	Sacramento	1842
Pittsburgh	5260	Georgia	1637
Chicago	5172	St. Louis	1447
Lehigh Valley	5172	Los Angeles	864
Knoxville	5149	Calumet	
Hudson Valley	5042	Charlotte	
Richmond	4958	Cincinnati	
Providence	4750	Dayton	
Cleveland	4629	Greensboro	
Indianapolis	4486	Hartford	
Greenville	4252	Louisville	
Twin City	4111	Stamford	
Dallas	4059		

Trade associations can be an excellent source of educational projects, but often they have not been. There are about 17,000 such organizations in the country. A majority of them engage largely in legislative activities. With the attitude of distrust, which we discussed earlier, you can see what type of legislation they often seek.

Where trade associations have taken up education as a project, they have attracted new and better members. Their increased incomes enable cost reduction studies and promotion of business programs.

If this trend toward additional educational activities through trade associations continues, a great constructive effort may be developed.

In winning World War I and II, in waging the Korean police action, the American people learned how to learn rapidly. Millions of people had to acquire new techniques almost overnight. Vocational educators worked out the programs they described as: "T.W.I.—Training Within Industry," or "J.I.T.—Job Instruction Training." Today, as we look back into the reasons for victory, we see that adult education is a powerful force.

Many Approaches

There are many ways in which small businessmen can get together and gain the knowledge they need. One way is through extension courses organized for their aid by many of our schools and colleges. Another is through such organizations in the community as are directly or indirectly interested in the community's business achievements. Some of the chapters of S.A.M. have developed and coordinated meetings and institutes for small businessmen. Still another way is through small business conferences or discussion groups organized on the local level.

Whatever you can do to encourage and furnish education for business will help your community and your own enterprises, but most of all—youself!

END

THOMAS E. KELLY, a professional engineer, joined the Atlantic Refining Company in 1935 and is now Manager of its Methods and Standards Department. Active in S.A.M. for many years, he served as President of the Philadelphia Chapter from 1942-44 and as National Vice President in Charge of Operations from 1946-47. He has also worked with various trade associations and universities.

Management Integration Through Methods and Standards

By Thomas E. Kelly, Manager
Methods and Standards Department
The Atlantic Refining Company

Citing his own company's experience, Thomas Kelly shows how methods and standards can help to develop greater integration of management's objectives in such work as organization planning, profit planning, standard practices, and forms control. Looking ahead, he takes stock of the probable effectiveness of such new management tools as operations research and electronic computers.

MORAL obligations to stockholders, employees, and the public make *continuity of efforts* toward profit planning and cost reduction or expense control a *necessity*. Moreover, the seriousness, breadth, and intensity with which management implements profit planning and cost reduction objectives, are what effectively indicate whether a company has good, fair, or poor management. Cost reduction can be a positive and dynamic forward-planning program. To an increasing extent we recognize that good management equips itself to make profit planning and expense control its everyday business rather than an irregular or spasmodic campaign job. This need for continuity of effort has caused many companies to either establish their own management engineering service units or enter into arrangements with management consulting firms.

More and more, management is reminded that its main function is to devise methods and systems for directing and integrating the efforts of fellow workers. Each generation has contributed to the art or science of organizing and directing human effort. Each generation has also contributed to the producing of services, products and a way of life that has gradually formed our present complex business and social world.

With each succeeding year there is evidence that management problems are becoming increasingly complex in both scope and depth. Competition for survival through lower costs and better products, adjustment to the impact of company growth, and the impingement of social and legal problems have forced each management specialty to develop to a very high degree. The requirements to coordinate and evaluate the multiplicity of factors bearing upon management's problems have indeed been almost overwhelming.

Top management realizes that the life span of any one individual, regardless of his native ability, will not permit him to become an expert in all the complicated phases of today's large enterprises. As we reflect upon the great men of history, we realize that man's native mental and physical capacity has not noticeably grown over the years and there is little reason to expect that it will in the future. The solution to the problem of complexity does not appear to lie in this form of man's growth. Where do we look for the solution?

Fortunately, there is a sound and tried basis for relief in simplifying the task of managing through the methods and standards approach. Through methods analysis, we must carry even further our attempts to divide management's job into component parts suitable for delegation and control. We must continue persistently to translate experience and judgment into principles and policies which can become available guideposts to action for *all* members of the management team. We must work harder to convert what was done by hunch or intuition into systems and prescribed methods which can more easily be taught and followed by all members of the management team who might be concerned.

Finally, we must take a new look at the need and availability of coordinating media to cope with the rapidly growing interplay of management's many interests. There is a major need for increased effectiveness in integrating methods and standards with management's various objectives and functional interests. By effective integration, I mean not

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only as to scope, vertically and horizontally, but with respect to speed for accomplishing the integration required in day-to-day activities.

Management's Problems

Perhaps it would help if we took a moment to view with some perspective the nature and complexity of today's management job and the need for integrating our methods and standards work with management's overall objectives. Briefly stated, there are at least ten underlying broad problems that need continuous solving and re-solving in most business enterprises:

1. Planning objectives (with the profit motive predominant).
2. Planning organization structure.
3. Staffing organization with qualified personnel.
4. Establishing means for communications up, down, across and in and out of the organization.
5. Providing physical facilities, material supplies, and necessary funds for expenditures at the time, place, and in the quantities necessary.
6. Providing research and improvement in all phases of the company activity.
7. Providing means for establishing performance goals, appraising results, and for ascertaining time and place for application of corrective measures.
8. Providing motivation for supervisors and workers.
9. Providing for adherence to approved policies, procedures, and governmental requirements.
10. Providing for continuity of all the above.

Effective Integration

This is a pretty big order, isn't it? As many of us know, in any one or combination of these areas myriad separate and complex problems can mushroom. Running crosswise through these many problems is the need for directing specialists' attention to functions such as accounting, budgeting, finance, personnel administration, market research, inspection, public relations, and others.

I believe we would be remiss if we looked at methods and standards apart from this full context of management's complex problem. The integration of methods and standards with overall objectives of management does not "just happen." It takes the guidance and leadership of the president supported by a technical staff service and the combined cooperation and experience of all departments of the enterprise.

The integration to which I refer may become more real if we think in terms of a specific company. Since I am most familiar with The Atlantic Refining Company, I can illustrate the direction in which its management has been moving in an attempt to obtain this effective integration.

Beginning in 1946, a series of steps were taken to improve the coordination of our company's management. Through study and discussion, agreement was reached and Board of Director's approval was given to formal statements outlining in positive fashion our *company's overall objectives.* These formal statements of our company's objectives indicate the direction in which our company is pointed. They set a pattern which gives guidance to all members of our Atlantic team in their respective areas of interest.

An organization planning program was also initiated which, after extensive study, resulted in the spelling out and agreement upon a basic organization structure. It established the authorities and responsibilities of the Board of Directors and other top level management, including the President and executives reporting to the President. It outlined the grouping of activities into major components under the President. It developed and specifically spelt out the relationships which should exist between the company's operating and staff departments.

Attention was also given to establishing the *means for communications.* Committees on specific subject areas were established at three management levels. Each was composed of an appropriate cross section of members to permit interdepartmental coordination. Charters were drafted for each of these committees to overcome much of the usual committee weakness. For example, each committee was given a well defined scope of responsibility and each department represented on a committee was responsible for making decisions that would normally be that department's responsibility. The committees were essentially a channeling and consultation medium to bring to a focus the various interests that should be considered in well-rounded decisions affecting the company's profit possibilities. Reconciliation of the consolidated annual budget and 5-year forecast is but one example of coordinating committee activities.

Other means were instituted, such as having departments make presentations of their programs and plans to appropriate coordinating committees as a means of developing better understanding. Abbreviated current activities reports to inform upper levels of management about impending activities throughout various areas of the Company were also instituted.

Methods Analysis

Atlantic has had a long history in the use of methods analysts or industrial engineers. For example, we have had some 30 years' experience, both favorable and unfavorable, in the application of wage incentive plans. While we do not have as many financial incentives at the present time as in the past, we have used incentives at some period of time on many types of operations: packaging, trucking, yard labor, chemical processing, mechanical maintenance, and clerical payroll computations, to mention a few. Like many other companies, we have utilized our staff analysts to assist operating and other staff sections to design and install tabulating and clerical systems and management control reports. We have undertaken programs of work measurement, standard costs, production controls, and work simplification, as well as providing special methods studies on physical layouts, and manpower, equipment, or material utilization.

In recent years, however, there has been a pronounced recognition of methods and standards as an integrating force. It started in 1945 when it was decided that specialized services in methods and standards should be made available on a company-wide basis rather than being limited to one or two departments. The Methods & Standards Department, as a central staff unit, was assigned to the Vice President of Accounting & Analytical Services, who, with additional responsibilities for accounting, budgeting, auditing, and economics, reports to the President and is a member of the Board of Directors. Under the new organization, many ob-

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jectives not previously attainable became realities.

The benefit to the program from the interest and support which comes from our top executives, from the President on down, has been a steadily growing realization. Greatest of all benefits, however, appears to be the current recognition of methods and standards as an integrating force in the company's over-all activities.

Examples of Integration

Some examples of integrating methods and standards with management's over-all objectives may prove helpful in illustrating how varied interests can aid a company's unity of objective.

I previously mentioned our company's *organization planning* program. Because of the recognized impact of methods in the design of organization and policy structures, our Methods & Standards Department was utilized to initiate and set into operation a central staff unit known as the Organization and Policy Division. The methods analysis approach was used to formulate organization principles and policies and to establish fact-finding, analytical, and reporting techniques. Experience has shown us that for other than the very top functional descriptions or top positions of the Company, systems and methods are intimately entwined with organizational considerations of who should do what. We, therefore, find it profitable to integrate our findings from methods and standards work with the company's Organization and Policy Division's overall planning.

Profit Planning

In late 1953, agreement was reached between the President, the Methods & Standards Department, Accounting and Budgeting units, and two of the company's four major operating departments to initiate what we termed an integrated *"Profit Planning & Expense Control"* program. Upon the President's approval of the basic principles involved, the Methods & Standards Department was authorized to coordinate the program between the participating line and staff departments.

If this were to be considered only in terms of a conventional standard cost or budget control system, there would be little reason for referring to it except perhaps to comment on some of the techniques we have developed for measuring unusual types of work. The distinguishing feature, however, is that we have designed this program and think about it in terms of having methods and standards as an integrating force tying together operating, accounting, budgeting and numerous other activities. We see it as a force to aid in meeting the company's overall objectives for expense control and profit. To be more specific, let me mention some of the program features and approaches utilized.

Coordinating Steps

1st. Wherever measurement can be made, *performance standards* are established for items affecting expense and profit, such as units of cost, yield, volume and income. Our industrial engineers have been quite successful in developing standards for many previously unstandardized activities such as crude producing functions, automotive fleet dispatching and operating, clerical activities of wide variety, and field or shop mechanical maintenance activities, to mention just a few. For standards involving other than labor activity, the industrial engineers are expected to render a coordinating service and seek assistance from other qualified staff experts where they are available. As coverage increases under this program, we anticipate considerable participation by a number of company specialists, such as from the Research & Development Department on refinery processing standards, from Market Research on certain sales standards, or from the petroleum engineers on certain aspects of oil and gas well production standards.

2nd. The industrial engineers blend their measurement efforts with those of accounting and operating supervision to establish *actual cost records* that are most usable. Costs are developed on a cost center basis and are realistically related to each supervisor's area of assigned responsibility. Cost figures are also designed to recognize the fixed and variable components so as to aid planning or explanations of deviations from standard performance.

3rd. With guidance from the performance standards, the operating supervisors establish and assume responsibility for their *expected budgets* for the budget period ahead. This permits realistic budgeting for financial planning and at the same time holds each supervisor responsible for trying to improve his budget in the direction of standard or better.

4th. The program encourages *profit planning* by operating supervisors. Convenient standard tables are provided which help supervisors plan alternative courses of action as a means of selecting the best.

5th. The program calls for an integrated set of *performance control reports* tying together the various levels and branches of operating and staff supervision. While the reports are keyed to each other, an attempt is made in all areas to tailor them to specific supervisory needs.

This program has been gaining momentum nicely in the last year and appears to have excellent promise for the future.

Another example consists of the development and by-product uses of what we have termed "*Engineered Planning Times*" and "*Standard Practice Instructions.*" This was developed through the joint efforts of industrial engineering personnel and operating supervision. Essentially, it was a program to provide measurement, standardization, and planning for a variety of plant maintenance and construction activities. The activities occurred in various shop, and widely scattered field locations in a refinery maintenance department of some 1400 employees.

Benefits of Planning

While originally the objective was simply defined as "providing a means for evaluating and controlling performance," the joint efforts bore fruit in many unexpected ways as the program developed. The benefits to be obtained from advanced work planning by the use of time standards forced the standardization of methods and materials. The need for developing the "one best way" between the practices of many foremen and their craftsmen was met and a detailed set of Standard Practice Instruction Manuals was developed. The development of these Standard Practice Instructions forced the reconciliation of the various views on methods and materials after thorough discussion with operating supervisors and representatives of engineering, inspection, and safety functions.

The expansion of the original objective continued and as a next step the paper work was transferred from foremen to planners. This freed the foreman so he could guide work in progress and correct the projected plan to provide for unexpected contingencies which are so characteristic of maintenance work.

Cost Reductions

Once again, the original program was expanded so that the methods and standards work could be further integrated with the broader management needs. It was found that these Engineered Planning Times and Standard Practice Instructions could be used to aid management in six or seven other objectives for reducing costs. Our operating supervision informs us that cost reductions on planned work have reached nearly 20 percent and the potential looks like about 35 percent. That's the payoff when methods and standards are fully integrated with management's various objectives. I would remind you, however, that it calls for raising our sights above the time study level.

As in most companies, clerical activities, office facilities and paper work systems are common to all departments of our company. We also find that it takes continuous study and improved methods to even slow down the growth in clerical activities that has accompanied business complexity. There have been occasions, too, when overall cost reductions such as those anticipated by the introduction of new duplicating or tabulating equipment, or a new type of report, soon become obscured. Supervisors find it is so easy or inexpensive to get information, or soon they like a new report so well, that they add to their requests for types of information and numbers of reports, thus causing increased total clerical costs. This is just another example of the need to keep our sights high as we carry on with our methods work.

We find, as do most large companies, that it is essential to have a methods analyst review all requisitions for forms. This is not merely because forms in themselves are expensive, but more because they usually are responsible for substantial clerical costs when placed in use. Frequently the review of a new form or form renewal request, sparks off the development of new and better systems. The review also permits a tie-in with a retention of records program we have designed, not merely for protection of important records, but more to economize in record storage space and facilities. More pertinent to the subject of this presentation, however, is the observation that many clerical or office systems reach up and down and across departmental lines and their study offers unusual opportunities for the broader cost reductions through methods coordination and improvements.

What of the Future?

Occasionally we pause to speculate on what the future may hold for us. From all the straws that blow past us, we are led to conclude that the next few years will offer one of the most full-blown challenges ever extended to management engineers. I say "full-blown" because it is unlike previous challenges. We have gone through periods of depression where neither sales nor capital funds were available for expansion. The challenge *then* was confined primarily to maintaining sales and reducing costs. We have gone through periods of war production where materials were limited. The challenge *then* was for expansion and getting out increased production at almost any cost. In today's challenge, however, we have materials, we have sales demand, and we have capital. Our challenge is the well-rounded one, through *all* phases, to meet keen competition for better products with lower costs and, to top it all, we are confronted with an ever increasing urgency to meet the growing business complexity.

I propose, therefore, that we take stock of our management tools to see which need sharpening and what new ones might offer possible advantages.

1. As for the *sharpening of old tools*, perhaps we should re-examine some of the old standbys such as wage incentives, standard costs, production controls, and budgets to see if they help to integrate sound methods with our company's overall profit planning and expense control objectives.

Where labor is involved it is becoming increasingly important to have fairness and consistency throughout the company for level of performance requirements. This means the development of maximum skills in performance rating at both base wage and incentive levels. It also means development of skill in documentation of methods by the industrial engineers so that management may, to the extent that that is fair and justifiable, bring effective pressure to bear toward maintaining good performance.

Let us be sure our engineers do not get "taken away" with measurement numbers developed by an imposing array of new techniques in situations where real measurement is not yet possible. Without some conservatism in this respect, industrial engineers may discredit their profession and retard the benefit from their programs. A flair for the new and impressive is not a substitute for sound engineering counsel. Whenever unreliable performance measurements are used in an attempt to control, we are a party to training the affected employees and supervisors in the ability to successfully alibi their failure to perform creditably against these measurements, and to carry their alibis over to the work under reliable measurements.

Perhaps as we reflect upon these old standby tools we should ask our managers if they intend to take the necessary corrective actions pointed out by the control programs. These programs are too costly to develop only as a front to appear efficient.

Operations Research

2. As to the *newer tools and their prospects* for helping to meet the full-blown challenge confronting us, much of a confusing nature has been written and spoken in the last few years about what has been termed *"Operations Research."* Like many new movements it has its following of faddists. Unfortunately many of them don't know what it is they are following and their enthusiastic, rash claims may injure a promising technique. What has evolved, however, is a concept, a method of approach, and a growing group of statistical and mathematical tools for problem solving at a high management level. It is a step favoring the introduction of research and experimentation to the field of management. It is in effect nothing more than a further development of management engineering or industrial engineering. It is a further effort to provide management with the necessary facts and qualified opinions on a more nearly quantitative basis as an aid in making important decisions.

Caution Required

Contributions to the source materials are obtained on a team basis from various qualified specialists. Another part of the operations research concept is that of utilizing where practical the various statistical and mathematical disciplines available to convert more of the judgment items into quantitative values. In some instances the use of these disciplines enables expressing quantitatively the interrelationship of a number of variables in a complicated problem. To an increasing extent ways are being found to apply the methods of linear programming, game theory, symbolic logic, queuing theory, and other branches of mathematics and statistics to such practical problems as scheduling of work, optimizing utilization of equipment, inventory time control, optimizing price-volume and profits, and scheduling of product mixes.

These techniques, however, cannot be utilized to aid problem solving at high levels unless, of course, the study group itself reports at a high enough level. The group must secure top management acceptance and support to the inquiries which must be made across departmental lines. I believe the future in this field is quite promising, particularly with the use of electronic computers. It is a further step in making methods an integrating force for profit planning and cost reduction.

3. The rapid rate with which equipment suppliers are improving the design and ability of *electronic computers* to meet business data processing as well as scientific requirements places one of the heaviest impacts on methods we have witnessed in many a year. As many of you know, these computers will perform adding, subtracting, multiplying, dividing, sorting, comparing, searching, and related operations at electronic speed and through a system permitting many prescribed variations in routine. While they can perform their operations at tremendous speed, they are in essence "electronic morons" and cannot think or initiate a new plan or course of action. *They are completely dependent upon prescribed methods or alternative methods which must be covered by procedures in the minutest detail.* Applications to such things as inventory con-

trol, payroll computation, accounts receivables, production control and market research are now practical realities resulting in major impacts upon our way of doing business.

There is great promise of savings in manpower and tremendous gains in the speed with which information can be made available. New opportunities for methods have been opened where previously the securing of information was too costly or time consuming to be practical.

4. We can't look into the future without considering the significant developments in the field of *business data and facsimile transmission* between distant points by electrical means. Closed circuit television has already been introduced for bringing control locations, indicators, and people of an organization closer to each other. Our Domestic Marketing Department, for example, has utilized such a device to simultaneously launch new product demonstrations in several scattered marketing regions. In a number of companies office equipment in remote areas actuates and supplies data to more expensive equipment in centralized areas. Conversely, automatic office equipment can be installed at remote locations to receive information from central control sources. Many of our concepts of methods and decentralized organization will have to be reexamined in the light of computer potentialities.

The newer aspects of so-called "*automation*" will bear much attention, also. Automation of today involves not merely automatic equipment but automatic feedback controls actuated by electronic computers. "Sensors" report to the computer what is found as to gauge readings of speed, pressure, size, weight or anything measurable. A "memory" unit holds information as to what should be going on, while a "collator" activity compares the sensory findings with memory. If disagreement exists, the collator receives instructions on what to do from the memory and causes the automatic equipment to do it.

In this latest interest in automation there is again the need for making methods an integrating force for cost reduction through a coordinated study involving the equipment design engineers, process research engineers, industrial engineers and operating personnel.

All of us in responsible key positions feel the pressure of today's business tempo and complexity. We are constantly reminded that in each of our special ways we are but limited contributors to the enterprise.

Ever present are the demands upon managers to coordinate and evaluate the multiplicity of factors and individual contributions which go into the making of sound decisions for profit planning and expense control. The challenge stemming from today's rounded business outlook is full-blown. Our profession is needed to help management integrate methods and standards with its overall objectives for profit planning and cost control. Will the management engineering profession rise to meet the challenge and will management seek out the help that is made available? **END**

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New Management Writing . . .

PROFIT MANAGEMENT AND CONTROL

By Fred V. Gardner, McGraw-Hill Book Company, New York, 1955, X, 285 pp., $6.00.

"Management's techniques in coping with product growth have developed much faster than the ability to measure and express these values." "People who by inference are custodians of value think in terms of figures which are bound in a 'strait jacket' of accounting and cost techniques."

FROM this start, Fred V. Gardner moves into the basic task of management. "This is to produce a profit which represents a fair return on the capital invested". . . . "When management can plan its profit performance, project its plans to possible multiples of volume, and then realize its profit plans, only then can it be said to have achieved *profit control.*"

Then the author shows *how* in two sections. Section 1—Basis for Profit Control—consists of 11 chapters, 102 pages. Section 2—Use of Breakeven Points in Management Decisions—is divided among 15 chapters, 175 pages.

Section 1 stresses the shift in breakeven point and profit caused by the interplay of three factors. These are (1) volume, (2) product mix, and (3) performance. Performance is the control of costs or lack of it. Volume alters greatly the effect of the substantial constant costs of a going organization. Gardner calls these *time* costs. On the other hand, the *variable* costs are different for the several products in a mixed output and so are the profit margins. His point here is that good cost performance keeps the variable costs in line as changes take place in volume and mix. What he emphasizes is the lag or lack of control each time volume slides back. The tendency in industry, he points out, is to allow this lag to raise the breakeven point by default to a new high.

The second part of Section 1 displays the interrelations between the changing costs and profits on the one hand and the need for working capital on the other. He uses many examples to show how, with so little profit left after taxes and dividends, a company can be hamstrung in attempts to expand and improve.

Section 2 goes into the relation of breakeven points in forecasts for costs and capital requirements, overhead control, profit efficiency, selling prices, organization structure, bonus plans, supervisory education, labor relations and "direct costing."

In Chapter 17, the author gives a practical way to compare your costs and profit paths with those of your competitors, large or small.

To improve profits, he favors incentives. But he says that "the popular method of paying bonuses based on profits is fundamentally and psychologically unsound." He believes that rewards should be based on "the efficiency producing profits or losses" (breakeven conduct) and the ultization of capital (capitalgraph).

He devotes one chapter to retail stores, and the remaining three to Eye Control Management, Better Accounting Techniques, and Controllership. These make a fitting closure to Fred Gardner's emphasis on management's need for "honest" figures—the why and how of dynamic reporting as contrasted with static accounting.

The book is easy to read and to understand, in the main. Some steps omitted in a few examples force the reader to do some figuring on his own.

Altogether this book offers a very profitable study for most managers and accountants. Cost analysts, middle managers, and those who aspire to be such, should acquire a working knowledge of the fundamentals set forth. All readers of *Advanced Management* who, in any way, affect decisions involving methods improvements should study this book. You may wish to learn how "improvements" will change the breakeven point of your company. I hope all of you find in this book as many useful principles as I did.

Phil Carroll
Professional Engineer
Maplewood, New Jersey

THE 20TH CENTURY CAPITALIST REVOLUTION

By Adolph A. Berle, Jr. Published by Harcourt, Brace and Company, New York, 1954. 192 pp., $3.00

ADOLPH A. BERLE'S most recent book, *The 20th Century Capitalist Revolution*, is not one for casual reading. It is a challenging, thought-provoking, and reassuring examination of American capitalism as it has developed in the present century, and particularly since 1930. Like his earlier work with G. C. Means, *The Modern Corporation And Private Property*, the present study is one of profound scholarship and understanding.

American capitalism at mid-century is a highly successful fact. As Berle points out: "In its aggregate achievement American capitalism is unsurpassed. Taking all elements—including human freedom—into account, its system of distributing benefits, though anything but perfect, has nevertheless left every system in recorded history immeasurably far behind. Its rate of progress shows no sign of slackening. Even its instabilities and crises relied on by Marx and by the present Soviet government to destroy its surrounding social fabric show indications of becoming manageable. . ."

The very success of American capitalism has probably contributed to a relatively weak intellectual defense against the various attacks made upon it. American business, for most part, has simply not bothered to defend itself against attack. Where a defense has been attempted, Berle observes that "the defenders have reiterated theories and descriptions propounded by Adam Smith in 1776 . . . (and) by Ricardo in 1817." It appears that "no one . . . has seriously undertaken to restate the actual practice of American capitalism."

What is the "actual practice of American capitalism" in the 20th century? It is this question to which Berle devotes himself with great philosophical insight and wit. The result is a thought-provoking analysis of the American business corporation as the dominant organization in the economy.

The phenomenon of large-scale corporate enterprise cannot be explained wholly in legal or economic terms. The life-blood of the corporation is not to be found in the legalistics about "corporate personality." If all corporations were suddenly declared to be illegal, they would not cease to exist as living and vital institutions in our economic life. Neither can corporate enterprise in 1955 be explained in terms of economic doctrines of 1800 with their almost exclusive emphasis upon small-scale competing business units. The corporation, Berle observes, must be examined as a *quasi-political* institution. It is in this examination that he finds "the 20th century capitalist revolution."

Berle's proposition is that the modern American corporation has a conscience. It is not a fictitious legal entity motivated exclusively by the desire to maximize economic gain. If it is, he asks, why was it that American automobile manufacturers did not arbitrarily raise prices in a post-war market when obviously they could have received a much higher return if they had followed the principle of taking all the market would bear? Why have private utilities made "uneconomic" extension of power lines in order to electrify 95% of America's farms?

The answer lies in the "higher law" of corporate conscience. Although our century has seen a relative decline in competition and a significant concentration of corporate power, the business corporation has not become a tyrannous institution. It has, instead, become an increasingly serviceable institution. "It is now," Berle says, "essentially a non-status political institution, and its directors are in the same boat with public office-holders. If ever corporate managers base their continued tenure on power and not on reason, the end is disaster."

How does the "corporate conscience" evolve? It is observed there are three sets of forces tending to keep the corporation responsive and serviceable. The first is simply the force of public opinion. The second force is that of competition. In a market situation characterized by a dominant "big three" or "big five" there is, first of all, competition between products as is true in the case of General Electric and Westinghouse and with Ford and General Motors. Again, there is competition which arises from the possibility that other industries will offer substitute goods and services (over-pricing of coal will simply lead to greater use of natural gas, and so forth). Finally, there is maneuvering for the "leadership position" as is evident in the case of Ford and General Motors. Over and above the forces of public opinion and competition, there is an ever-present third force: the threat of the political power of the State.

The Berle thesis is certainly an interesting and provocative one. It is of course possible to cite exceptions to the "conscience" thesis, but it is extremely difficult not to agree with the main stream of thought: the modern American business corporation is not a soulless, hydra-headed aggregation of economic power motivated exclusively by the desire for pecuniary gain, but is increasingly in the present century a quasi-political institution which justifies itself not only by its vast output of goods and services, but by its responsiveness to life values—in short, it has gained a conscience. The thoughtful businessman will find this book an enjoyable and worthwhile experience.

Robert H. Laws
Economics Director
Society for Advancement of Management.

OPERATIONS RESEARCH FOR MANAGEMENT

By Joseph McCloskey and Florence Trefethen. Published by Johns Hopkins University Press. $7.50.

THIS new book on *Operations Research for Management* is in effect a popular sequel to the book *Methods of Operations Research* by Philip Morse and George Kimball. Operations Research was formally organized as an applied science by research workers concerned with military problems at the outbreak of World War II. Morse and Kimball gave us a text book account of the scientific methods which justify Operations Research as a science in its own right. Their examples were based on military applications although they earnestly believed that the methods would have similar benefits in industrial and business applications.

Now, after four years, some of the research people who were active on military problems have written a popular book on Operations Research directed to industrial and business management. This book gives the history of Operations Research in the solution of military problems, the methodology of Operations Research and a selection of case histories, some of which are concerned with industrial and business problems.

The book has drawn largely from the material used by Johns Hopkins University in its seminars and for training new operations analysts at their Operations Research office. Much of the material has benefited, therefore, by its use in the instruction courses. Some of the chapters on the case histories have been published in the Journal of the Operations Research Society and, therefore, have been reviewed by the practitioners of Operations Research. Thus the book has the same appeal as a set of lecture notes that have been quite useful over a period of time, finally being formalized in book form.

The argument in the book is a continuation of the Morse and Kimball argument, namely that Operations Research was useful to the military and is now appropriate for adoption by industry and business in general. The account of the history and status of Operations Research is certainly attractive and readable by managers as well as their staff advisors, although the story has been publicized greatly and is not new to many readers. This account, however, should serve to add further emphasis to the Operations Research story.

Part II on methodology includes an excellent introduction by Philip Morse and a very fine chapter on "Statistics in Operations Research" by Russell Ackoff. Both of these are quite readable and of interest to management people. Unfortunately the rest of this section is of little practical value to management itself. Although the expository papers in this section on queuing theory, symbolic logic, linear programming, etc. are excellent, they might better be addressed to beginning practitioners who are used to mathematical symbols than to the managers themselves who at this point would undoubtedly lay down the book and perhaps not even go forward to Part III which is again readable and of interest to management.

As a matter of fact, the chapters dealing with the case histories give about as much methodology as we might reasonably expect management people to absorb in this type of book and most of Part II might just as well have been omitted in addressing this book to management. In addressing the book to students or new practitioners, Part II is, of course, of considerable value.

Assuming that management people will read some or all of the case histories in Part III, they will immediately learn that Operations Research is indeed research and that research is understanding. This then is the scientific method, complete understanding of the operations under study. From such understanding will come recommendations for action which will give improvement far beyond the intuitive trial and error procedure. In this sense, Operations Research, of course, is not new. In fact, Horace Levinson's excellent paper on the return order problem in a mail order business and the problems on store hours and advertising in the department store business indicates some of the early studies in Operations Research.

The newer studies, of course, have

used newer methods, such as the Poisson probability theory, used in John Magee's paper on the effect of promotion on sales, compared with the less sophisticated statistical methods used in the prewar studies. There is no doubt that the military experience with mathematical model building has given the science of Operations Research much of its substance and made it stand on its own feet as a new and growing management science.

The obvious question in reading a book of this kind is "When will industrial and business management appreciate the possibilities in Operations Research as the military people did during the early days of World War II?" The answer to this question is undoubtedly that industrial and business management is gradually accepting Operations Research and that its use will continue to grow with time.

At present, there seem to be two different opinions held of Operations Research by management people who have not yet organized a program for the practice of Operations Research. Where Operations Research has been presented as something simple which has been practiced to some extent for many years, the subject is often dismissed as probably being of little consequence as an extension of any current activity. Where Operations Research has been described as constituting new and scientific methods, such as Linear Programming and Game Theory, the subject matter is sometimes dismissed as being only of academic and not practical interest at the present time.

In both cases, management people are keenly aware of activity which may be contemplated by their competitors, and this will eventually force all progressive companies into the adoption and practice of Operations Research to the extent justified. Other factors to be considered, of course, are the time, manpower and training required and the uncertainty of any research effort. In general, I would recommend that all management people read Part I on the history and status of Operations Research, the first two chapters in Part II on Methodology and Part III on the Case Histories and forward the book to their staff advisors who are skilled enough to benefit from the other expository chapters on methodology in Part II.

Gifford H. Simons
Manager, Economic Analysis,
Esso Standard Oil Company.

WHAT MAKES AN EXECUTIVE

***Report of a Round Table on Executive Potential and Performance. Columbia University Press, New York,* 1955, 179 *pp.,* $3.50.**

HERE we have a so-called report of a round table composed of seventeen distinguished men of affairs who devoted eight meetings to a consideration of executive potential and performance. They discussed at length such topics as: childhood experience and executive potential, the value of a college education for future executives, the identification of potential executives, the testing and rating of executives, the personal qualities executives should have, and the most effective means of training executives.

I should hesitate to call the book a report. Rather it seems to me to be a record or assembly of selected observations, comments, remarks, statements, declarations, recollections, narratives, descriptions, questions, pronouncements, and disagreements, which normally find a place in an extended discussion by intelligent and informed participants. The availability of this host of verbatim statements from which published material was drawn for the body of the book, was presumably assured by the presence of a tape-recorder.

This is a chronological array of what might be called authentic raw opinion, and herein lies the great virtue of the book. While the final chapter entitled "Guidelines for Policy and Research" attempts to summarize discussional highlights, yet any attempt to draw general conclusions or to lay down ensuing rules is specifically avoided.

The strength of the presentation lies in its inherent humility. In this area of executive potential and performance, the mists of the factual unknown still heavily becloud the truth. In such a situation the realist and the practitioner must for the time being rely upon the pragmatic findings of observed performance. More than this, there is helpfulness in the study of informed opinion, with its manifold variances, its apparent contradictions, and its reliance upon a background of tested individual experience. Indeed, informed opinion is about all we have to work with at this stage in our knowledge about executive selection and training.

Let me illustrate the resource available to the thoughtful realist, to be found in this small volume. In the chapter entitled "The Identification of Potential Executives" I found recorded some seventy-seven different comments dealing with various aspects of the subject.

To read this array of experiential data is to provide a new and heightened respect for the dimensions of the problem and to awaken an attitude of objectivity not to say humility that is a highly precious adjunct to one's current thinking.

I feel that I may safely say no one can read this presentation without experiencing a marked improvement in the quality of his own opinionative concepts.

I should be derelict did I not mention the opening chapter entitled "The Emergence of the Problem." It is the most comprehensive and yet succinct statement of the historical background of executive development that I have yet seen.

Professor Erwin H. Schell
Massachusetts Institute of Technology
Cambridge, Massachusetts

END

ELECTRONICS IN BUSINESS

A descriptive reference guide, prepared and published by the Controllership Foundation, Inc., 2 Park Avenue, New York 16, New York. July, 1955. 176 pp. $2.00.

Opening with a suggested basic reading list on business applications of electronic machines, this guide contains a series of brief descriptive references to articles, pamphlets, proceedings, and books dealing with electronic machines. In addition, there are sections describing electronic computer systems produced or readily available in the United States and Canada, and a descriptive listing of conferences and courses about computers in business scheduled for the balance of 1955. The guide is a second, enlarged edition of Business Applications of Electronic Machines.

ZEST FOR WORK

By Rexford Hersey. Published by Harper & Bros., 49 E. 33rd St., New York City 16. 270 pp. $4.00.

An expert in industrial psychology gives a realistic report of the factors that influence workers' reactions to their work. Like Elton Mayo's pioneering study of Western Electric's Hawthorne plant, this research is based on observing and interviewing the workers themselves. The author examines how different factors operate to determine worker productivity, safety, loyalty and other elements important to good performance.

CIPM Reports . . .

McClellan Gives Optimistic Report On Chile

"EVEN though I was well briefed in many respects concerning the developments in Chile, I was astonished to find the tremendous potentials which this country holds for future economic growth and expansion, stated Harold C. McClellan upon his return from a six-week CIPM-ICA assigment in that country.

Mr. McClellan, who is President of the Old Colony Paint and Chemical Company in Los Angeles, and Chairman of the Board of the National Association of Manufacturers, went to Chile to carry out the second phase of a four-phase project designed to help Chilean businessmen with their management problems and to strengthen and develop the newly formed Chilean management association, the Instituto Chileno de Administracion Racional de Empresas, (ICARE). Mr. McClellan's topic was general management. Earlier, Mr. Harold Scherr, President of the Juvenile Manufacturing Company in San Antonio, Texas, had spent six weeks in Chile discussing human relations problems with ICARE officials and with Chilean businessmen throughout the country, since it was felt that in Chile, as in all other countries, human relations was the aspect of management which needed the first and most concentrated attention. Therefore, although Mr. McClellan's assigned subject was general management, it was general management with a constant emphasis on human problems.

In visiting twenty-six plants in Santiago, Valparaiso, and five other Chilean industrial centers, Mr. McClellan stressed an idea of productivity that he terms "a broader and perhaps more acceptable long range concept" than that which confines productivity to more efficient production methods and lower wages. Mr. McClellan's definition recognizes four elements essential to building business success. They are the customer, the stockholder, the production worker, and the management. Each must be served, recompensed, or rewarded for its contribution in time, work or money. Mr. McClellan states that even in the present seller's market of Chile, a sound business economy must be based on this four-sided concept.

Terming his mission as being one that served as a "catalyst for objective thinking on subjects which have fallen within my experience during my business life," Mr. McClellan was inspired by the enthusiasm of industrial leaders in Chile for cooperative development of sound policy through their associations. Since he had had much experience with associations in the United States, he was surprised by what he calls "the great similarity between the problems to be met in Chile and those in the United States." He suggests that ". . . if the agricultural associations, the industrial associations, the commercial associations, the manufacturing organizations and the mineral and mining associations were to find agreement between themselves concerning the country's needs, and should develop jointly a constructive program for the purpose of creating better public understanding, tremendous results could be achieved. . . I must emphasize again . . . that the method which has proved the most successful for business and industrial representatives in the United States has been the method of constructive suggestion supported by adequate research and sound counsel."

Mr. McClellan concludes: ". . . Chile's problems can for the most part be readily identified and this is the first important step toward cure. I am extremely confident that the Chilean people have the competence to solve their problems and solve them rather quickly. If this is to be accomplished, the leaders in business and industry must accept that portion of the challenge which is theirs. I believe they will."

Jane Dustan, Editor

The Council For International Progress in Management, formerly the National Management Council, is a non-profit, non-political organization devoted to the promotion of the practice of scientific management on the international level. It represents the organized management societies of twenty-four nations of the Free World with its office at Geneva, Switzerland. SAM is a charter member of CIPM.

The Humanity Of Production

" . . . Industry is not a machine; it is a complex form of human association. The true reading of its past and present is in terms of human beings—their thoughts, aims and ideals—not in terms of systems or of machinery. The true understanding of industry is to understand the thoughts of those engaged in it. The advance of science and the cult of efficiency have tended to obscure the fundamental humanity of industry. We have paid in largely to our account of applied industrial science, but we are almost bankrupt of human understanding. The material side of industry has its place, but it is a subordinate one. Indeed, if the fundamental problem of industry can be reduced to the limits of a single question, that question would be: How best can we achieve and maintain a fair balance between the *things* of production—the machines, the buildings, the materials, the systems—and the *humanity* of production: the workers, the foremen, the managers, and the shareholders?

"This is the problem which is at the root of all the problems facing industrial management. Industry cannot be rendered efficient while the basic fact remains unrecognized that it is primarily human. It is not a mass of machines and technical processes; it is a body of men. It is not a complex of matter, but a complex of humanity. It fulfils its function, not by impersonal force, but by human energy."

"The present industrial "impasse" is due to the subordination of the human to the material element. While our industries have grown increasingly scientific, we are denied the fruits of our efforts because we have failed to keep pace in the art of human leadership, understanding and co-operation. Pursuing things, we have neglected men. Winning efficiency from our machines, we have forfeited efficiency in our workers. The need of industry is a stronger electrical thrill of common human understanding. . . ."

Excerpted from The Philosophy of Management by Oliver Sheldon, B.A. Pitman & Sons, London. 1924. *Pages* 27-28.

What do you think? If you wish, send in your comments (which may be published) to the editor.

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12:15- 1:00	Lunch
1:00- 1:45	Luncheon Speaker
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9:00-12:00	Case Studies (Continued)

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10:00-11:00	Accounting and Finance Function
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METHODS AND PROCESS ENGINEER

Challenging opening for young industrial engineer to associate with leading home air-conditioner manufacturer. Duties include development of methods and equipment and programming for automation. Should have background in methods improvement, processing, and time study in refrigeration or electric motor manufacturing. Must have engineering degree or equivalent experience. Age 25-35. Salary commensurate with ability.

Please send resumé of education, experience, present salary, and small photo, if available, to:

Personnel Director
The O. A. Sutton Corporation
1812 West Second
Wichita, Kansas
Manufacturers of VORNADO Products